The Builder.

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THE avidity with which knowledge of past and hidden things is sought for, the extraordinary skill that is shown in the pursuit, and the success which has attended the endeavours, are striking characteristics of the present time. An isolated observation is made; other facts are added; and a theory of a whole is deduced in rapid succession. A bone is found, and the animal is re-created to the sight; a sculptured stone and a few foundations are dug up, and the history of a nation takes a form and completeness which, on the first scanty premises, it would have seemed weakness to expect. One of the most striking instances that can be mentioned of the power of the moderns in this respect is the mastery that has been effected of the arrow-headed inscriptions of Assyrian nations, an interesting account of which is given by Mr. Fergusson in his new work on the palaces of Nineveh and Persepolis,*—a work to which we warmly recommend the attention of our readers.

Looking at these markings, so similar in form, apparently no clue remaining, interpretation might have seemed impossible, and it would probably puzzle most readers to devise even a first step towards the removal of the mystery in which they were shrouded. To describe the process, which led to what may well be considered a triumph of modern science over difficulties, would occupy more space than we can give; but we will indicate roughly the course that was taken. Professor Grotefend gave the key: M. Burnouf, Professor Lassen, and Major Rawlinson opened the lock. Grotefend took, for analysis, two short inscriptions at Persepolis, and found that they were identical in form; that one word occurred three or four times over in each (which was therefore assumed to be a title), and was led by this and other minute facts to the conclusion that it was a genealogy that had been recorded, to the extent of father and son. He next proceeded to try to find to whom these names belonged; and, having arrived at the conclusion that Persepolis was the work of the Achæmenian dynasty, he tried their names in succession. Cyrus and Cambyses would not fit, for none of the three names began with the same letter. Cyrus and Artaxerxes were equally inapplicable, as the names in the inscription were nearly of the same length, while one of these was twice as long as the other. He then tried the right ones, and they fitted as nearly as could be expected. He next proceeded to prove that they were the correct ones, by testing the position of the several duplicate letters which occurred in the three names, and ultimately produced such a result as left no doubt in the minds of candid inquirers that he was correct. The further steps we cannot afford space to trace: suffice it to say, there is now not a paragraph in all the inscriptions whose meaning can be considered doubtful.

* "The Palaces of Nineveh and Persepolis Restored: an Essay on ancient Assyrian and Persian Architecture. By James Fergusson, author of 'The True Principles of Beauty in Art.' London: Murray, 1851."

Mr. Fergusson's book, which has led us to these remarks, is another instance of the fact we asserted at starting. A few sculptured slabs and winged bulls are discovered at Nineveh and Khorsabad, and straightway appears before us the buildings which they composed, perfect and complete. Mr. Fergusson, by his travels and studies, was well qualified for the task, and has performed it very efficiently.

In the first part of his work he describes at some length the buildings of Persepolis,—"The richest of cities under the sun,"—which, although long posterior to those on the site of Layard's researches, he considers of the same type. In the second part he describes and reconstructs the buildings of Nimroud and Khorsabad.

We are contented to suppose that the oldest Assyrian buildings yet discovered, the north-west and central palaces at Nimroud, are contemporary with Abraham, and date about 21 or 22 centuries before our era.* The date of the Persepolitan buildings is many centuries after this. The final destruction of Nineveh took place about the year 600 before Christ. The Greatwinged Bulls now standing dignified, almost sublime, in the hall of the British Museum, have been covered up till now, and are brought to us whole and unarmed, to verify written history, to enable us to realise and people the past, and to correct the vain-glorious feelings of the present. Look at them, good reader, with the *mind* as well as the eye when you next visit our national repository of monuments. Rome was not founded till centuries after these were worked.

The buildings at Khorsabad, exhumed by M. Botta, on the part of the French Government, are dated by Mr. Fergusson about 1300 years before our era. The specimens brought to Paris, although of the same type as those sent to us from Nimroud by Mr. Layard, show much less power than the earlier works in our possession. In Persepolis our author considers we have the skeleton of a complete system of Eastern architecture,—we have the pillars, the doorways, and windows, but not the walls or roofs. In the Assyrian palaces, on the contrary, we have the walls and their ornaments, but the pillars and windows are wanting; and, by putting the two together, he is able to render both intelligible. Khorsabad offers greater facilities for restoration than Nimroud, and we will take his illustrations of the palace at the former place to elucidate his views.† Fig. 1 is a restoration of the northern angle of the palace-court. Fig. 2 is a section of the principal rooms.

The walls, it will be seen, were exceedingly thick, 16 feet 6 inches, one; 21 feet another, and Mr. Fergusson's main point is this,—that these walls were carried up only a certain height, say 18 or 19 feet, and then that on the top of the wall were placed two rows of dwarf wooden pillars, one on the inner, the other on the outer edge of the wall, which supported a flat terrace roof, composed of mud, and plastered on the top. The larger halls, probably, had pillars down the centre, to help to support the roof; and the central hall, he thinks, must have had a roof higher than the rest, perhaps trussed to a certain extent, as shown in the section. The tops of the walls, paved with tiles, or floored with wood, had low parapets, and formed a series of upper chambers. By this arrangement, light was admitted to the great halls (tempered by curtains), while both rain and the rays of the sun would be excluded. The theory is very strongly supported, and accounts for the most striking peculiarities of these palaces. The winged lions formed the entrances, and the sculptured slabs, of which so many were found, lined the walls. Above the slabs, the walls were coated with tiles, and specimens of these are to be found in the British Museum. The buildings at Persepolis were probably covered in the same way.

* Rawlinson does not give them so great an antiquity.

† See page 149. The ruins of Khorsabad are situated about ten miles north from Nineveh. The city walls were *45 feet thick* at the base and about 35 feet high!

"To a person accustomed only to the colourless stone architecture of Europe, such a mode of building and decorating a building may, indeed must, appear anomalous; but it requires only a slight acquaintance with Eastern art, and more especially with that of Persia, to understand that, even setting aside the evidence of existing remains, it is more than probable that this would be the mode adopted for so ornamental a structure as this one appears to have been.

In all ages and in all countries, Eastern architecture seems to have been much more remarkable for its colours than for its forms; and whether we turn to the Alhambra or to the buildings beyond the Indus, the same fact meets us everywhere. It is no matter how flat or how extensive their plain walls may be: everywhere the most exquisite and delicate ornament is found covering them, and relieved with the most brilliant, and at the same time the most harmonious colouring. They were thus enabled to dispense almost entirely with form or shadow, and trusting only to ornament and colour, to render that beautiful which in itself had no pretension to either beauty or design."

The architecture of the Assyrians depended almost wholly for its effect on its sculptured decorations of men and animals, and the coloured adornments with which they were completed. "Least in importance—in the eyes of the Assyrians—were the pillars and the roof they supported, and the walls against which the sculpture and paintings were placed; all this being almost exactly the reverse of what we find in Grecian, Gothic, or modern art; and whether the Assyrians were right or not in adopting this singular gradation of parts, it is, perhaps, of all the circumstances connected with this style, the most interesting, as being literally, to us, a new idea in art, though perhaps the first and oldest form of art that the young world knew."

Our third illustration is a possible view of the Hall of Xerxes, at Persepolis, without the columns and ornaments which covered its walls, and adorned the roof. The centre hall of this enormous building covered internally more than 40,000 square feet, or with its walls, 55,700 feet. "The great hall at Karnac, the most stupendous building of antiquity, covers internally 58,300 feet, and, with its walls and porticoes, only 88,800, and the two largest temples of antiquity,—those of Jupiter Olympius at Athens and Agrigentum,—cover respectively only 59,000 and 56,000 feet. We have no cathedral in England that at all comes near it in dimensions; nor indeed in France or Germany is there any one that covers so much ground. Cologne comes nearest to it—81,500 feet; but, of course, the comparison is hardly fair, as these buildings had stone roofs and were far higher. But in linear horizontal dimensions the only edifice of the middle ages that comes up to it is Milan cathedral, which covers 107,800 feet, and (taken all in all) is perhaps the building that resembles it most both in

style and the general character of the effect it must have produced on the spectator."

The buildings at Persepolis, we need not again remind the reader, are much more recent than those of Assyria. In conclusion, we have to express our earnest hope that means will be provided for the prosecution of further explorations in the latter country: the value of the discoveries already made there can scarcely be overrated, and Mr. Fergusson is entitled to our thanks for his able and ingenious disquisition, which strikingly assists in rendering this fact evident.

PROFESSOR COCKERELL'S SIXTH LECTURE.

HAVING taken Vitruvius as our text, and discussed the various points of importance in his writings, we have now to consider what the great architects whose writings have formed the subject of this series of lectures have said about interiors, and their scenography, optics, and perspective. The lectures of the Royal Academy being limited to the number of six only, afford but a very scanty opportunity for so much of desirable inquiry. Three times this number of lectures would not be enough for the analysis of the great works written on this magnificent art. According to Vitruvius, nothing was more important for consideration than interior proportion; and there was none in which young architects were more likely to err. Every one knew that the portico of St. Paul's consisted of two orders, one superposed on the other. This produced a beautiful harmony, but to ordinary eyes had the effect of diminishing the dimensions of the columns. A practical joke is related of a young mason about this optical illusion. The interior is known to be constructed with columns exactly the same in size as those of the lower order of the portico, but the young mason, being told this, wagered a bottle of stout that the interior columns were of twice the diameter of those outside. He lost his wager of the bottle of stout, but was thoroughly convinced the proportions of interiors always appear much larger. Vitruvius spoke of forums: we do not build forums now, although the architect's employment extends from Hong Kong to Canada, and thus he has to adapt his works to utility and to climate, and not to construct houses like some the professor had seen, which were intended for Ceylon, but were properly adapted for shooting-boxes in England. If we had not forums now, we had public places such as our own squares, and those in Paris: among these open places might be cited the Circus at Bath, which, although not much noticed, was one of the finest things in Europe. Having three equi-distant openings into it by streets, each of these streets had the vista of the centre of a block of buildings on approaching the Circus. Those which are in Piccadilly and Oxford-street offer no such vista, being crossed by streets at right angles. The Crescent at Bath was also a beautiful feature. Vitruvius speaks of the internal construction of a Curia, a sort of Court of Common Pleas: his directions are very important, as we are now building courts of justice intended for both seeing and hearing; and he proposes that a projecting cornice should be constructed half way up the sides to keep the sound from ascending and being lost in the ceiling. There is an example of this in Trinity College, Cambridge. In the sixth book he treats of the various kinds of courts and apartments and their proportions. He is not very clear on this head, but Palladio supplies the deficiency. More than double cubes could not be recommended for interiors. Guildhall, in the City of London, was an interior of three cubes: it was to be hoped we should have it reformed by the distinguished architect who now presides over the city of London. The 24th chapter treated of ceilings, a portion very much neglected in our times: an excellent example for large rooms might be studied in the Egyptian-hall at the Mansion-house: this Hall was designed by Lord Burlington. It is true that although the nobility no longer build mansions, there is room enough for the exercise of our art by cotton lords, if we have no longer land lords. Formerly the aristocracy were the greatest patrons of architecture. The English villa was a leading feature of our times; and a little book written by Sir Henry Wotton contained very judicious and sensible remarks: it was the first work written in the English language on architecture, and contained precepts admirably adapted for our purposes. Sir Henry Wotton was the ambassador of Elizabeth at Venice, and acquainted with Palladio. The houses built in the tranquil times of Elizabeth offer us the best examples of villas for England. Inigo Jones introduced the Italian villa into this country, and Lord Burlington renewed it among us, after we had been influenced by the caprices of the Louis Quatorze style. The classical models of Pompeii might replace much of our former arrangement. Sir Robert Peel's house at Drayton Manor was somewhat after this plan of ground arrangement. It is built round an inner court. The entrance is by a corridor, which leads on one of the inner sides of this court to another corridor, or atrium, and placed on the inner side of the court, at right angles with the entrance one. This atrium has a charming effect: the drawing-room at one end opens into it: the dining-room at the other end, and the library in the middle, equally open into it. It was a truly excellent arrangement, capable of great application and improvement, now that there are such resources in the use of glass. The Professor said he would pass over all the affectation of Gothic castles and impregnable towers, open to every intruder: the true character of buildings was much overlooked in this country. In Russia architecture had the character of barracks; in France it was military; and in England domestic. We had churches with two rows of windows to one apartment, giving, externally, the appearance of a building having a ground and first floor.

Wren was a remarkable poet in his art: all his works are of this description,—the theatre at Oxford, his churches, and other buildings. Architects must bear in their minds the poetical idea as well as the structural. It is not, however, a certain power of speech, a certain eloquence called "the gift of the gab," that is the acquirement. Rather, as Plutarch puts into the mouth of a builder, "I am a man of few words; but look at my plans, and you will see I propose to do well what the other talks well." Plan, section, and elevation are very ordinary matters: it is perspective that shows the truth. We should devise geometrically, and produce perspectively. Scamozzi on Scenery has some useful hints. The church of Marburg, as given by Muller in his excellent work, is a striking example of perspective diminution. The elevation is lank and ugly, but seen perspectively, becomes of remarkable beauty. The Adams' works were all to be seen near the eye, and therefore they covered them with small ornaments. The fronts of buildings seen at the end of a vista should have division into small parts to give distance: this is the chief apology for St. Peter's; and Guildhall in the City was unquestionably made into its sub-divisions for the appearance of receding. Distance or space is a natural feeling. In an apartment of four plain walls the eye feels confined: a landscape hung upon the wall is a great relief, and the small panelling in our Elizabethan houses gives space by the numerous divisions. Panelling is a great resource internally, and Pompeii offers beautiful examples, in which the small size of the ornaments have good effect for the foregoing purpose. The staircase at the Vatican, by Bernini, is familiar to all students for the gradual diminishing of the size of the columns on ascending, and their being placed gradually closer together, thus giving a greatly lengthened perspective by these artistic means. The student is recommended to walk through London in summer time, from four until seven o'clock in the morning, when he will have the streets to himself, and he will find abundance of subject for study and observation, quite as useful as travelling abroad for it. In termination of these lectures, the student must be reminded of the great theoretical writers on architecture, authors whom it is the student's duty to learn. If diplomas were given in the Academy, none should be entitled who had not studied the volumes of Palladio and Alberti. The lecturer had offered the best of his experience during forty years of study: the time will come when the professional life begins with all its cares and anxieties—there is then no time to study but for the work before you. Let no one suppose he has plenty of time, if he wish to become eminent, and desire to fill a niche among the architects of his country. It was a great regret to see the advantages of these lectures so little valued in London, and so thoughtlessly neglected by those for whose benefit they were delivered. Those who studied closely in their youth what their great predecessors had done, and cultivated all the theories tending to success, would find no cause to regret their intense labour and unremitting application, but would each eventually congratulate himself that it was his happy lot to be an architect.

CAST-IRON WORK.

BARBADOES, AND BUCKINGHAM PALACE.

MESSRS. H. and M. D. Grissell, of the Regent's Canal Ironworks, have just now completed a cast-iron tower, forming a light-house, for Barbadoes, from the designs of Mr. A. Gordon, engineer to the commissioners. This tower is 83 feet high, 18 feet 6 inches in diameter at the bottom, and 11 feet 6 inches at the top, and is formed of cast-iron plates 7 feet 6 inches high (ten plates in the circumference), 1 inch thick at the bottom, and seven-eighths of an inch at the top. There is a staircase to the top, and it has four wrought-iron floors. The cost of such a work is about 1,800*l*. The lantern is to be provided by other parties.

The same founders are executing the ornamental gates (under Mr. Decimus Burton) for the central archway in the new front of Buckingham Palace, and the gates and railings enclosing the forecourt. The latter are very plain, and the *fleur de lys* form adopted for the termination of the bars in the gates, gives a character to the ironwork scarcely concordant with that of the building. The gates for the archway are 15 feet high, and 13 feet wide, and consist of handsome scroll work, with two foliated female figures holding the Crown. In each panel are the letters V. R. entwined, and over each the royal arms. Part of the work will be gilt: the castings are very good.

DIORAMA OF THE HOLY LAND.

WE mentioned some time ago that Messrs. Bonomi, Fahey, and Warren, encouraged by the success that has attended, and is still attending, their diorama of the Nile, were engaged upon a similar illustration of *The Holy Land*,—a country marked with the footsteps of the Saviour, and full of associations of vital interest. It is now opened to the public in the gallery of the New Society of Painters in Water Colours, Pall Mall, and, if we are not mistaken, will prove one of the most popular works of its class, offering attractions, as it does, to every lover of art, every student of history, every thoughtful Christian. Mount Sinai, Petra (the mysterious rock-cut city), Bethlehem, Tyre, Sidon, Lebanon, Jerusalem,—what names these are to conjure with! As a work of art, it seems to us superior to the Nile: the artists have obtained greater mastery over the medium: some of the skies, and distances, for example, have scarcely been surpassed. The first portion of the diorama consists principally of views of country: midway is shown the Shrine of the Nativity (not quite so effective as it may be made, and probably will be). The second part takes us into the streets of Jerusalem, and brings us closer to some of the buildings, ending with an interior view of the Mosque of Omar, beautifully painted.

We cordially recommend this exhibition to our readers, and should be glad if an arrangement could be made, before it closes, to let all the national and other free schools of the metropolis visit it—but not at the cost of the artists.

NINEVEH AND PERSEPOLIS.

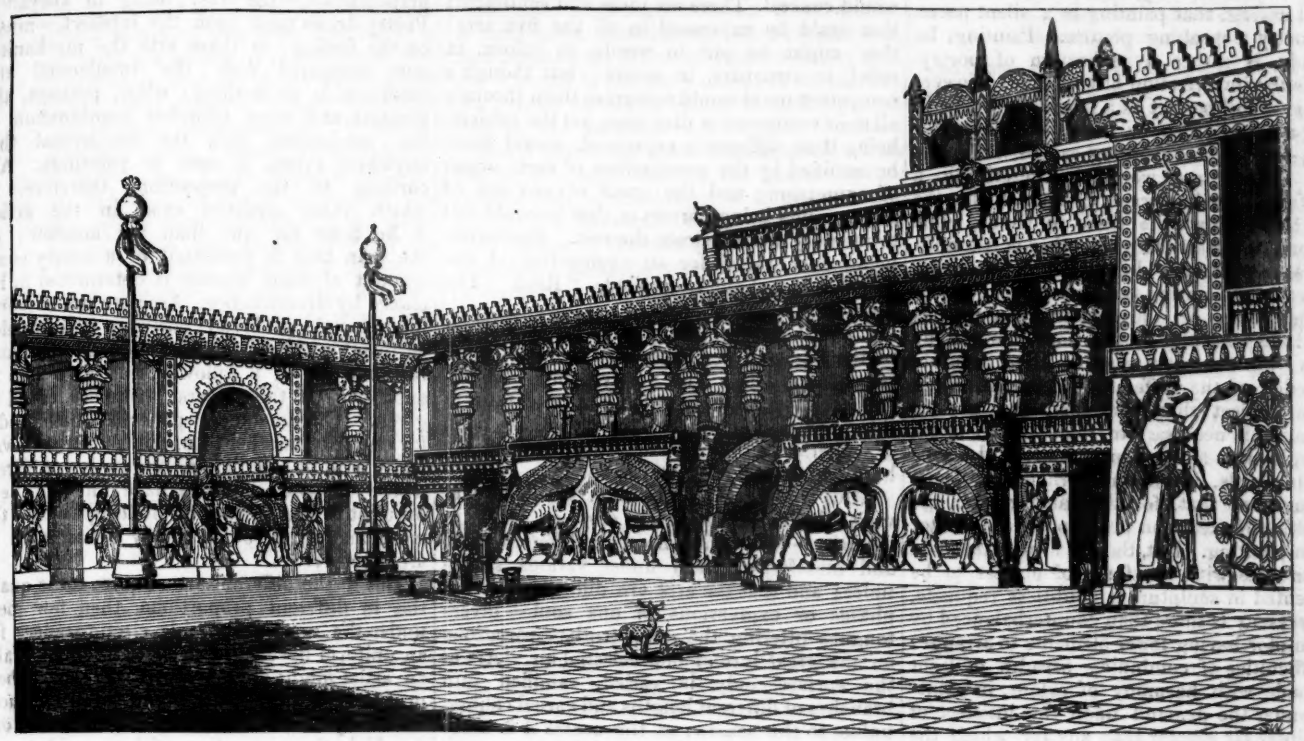

Fig. 1.—RESTORATION OF NORTHERN ANGLE OF PALACE COURT, KHORSABAD.

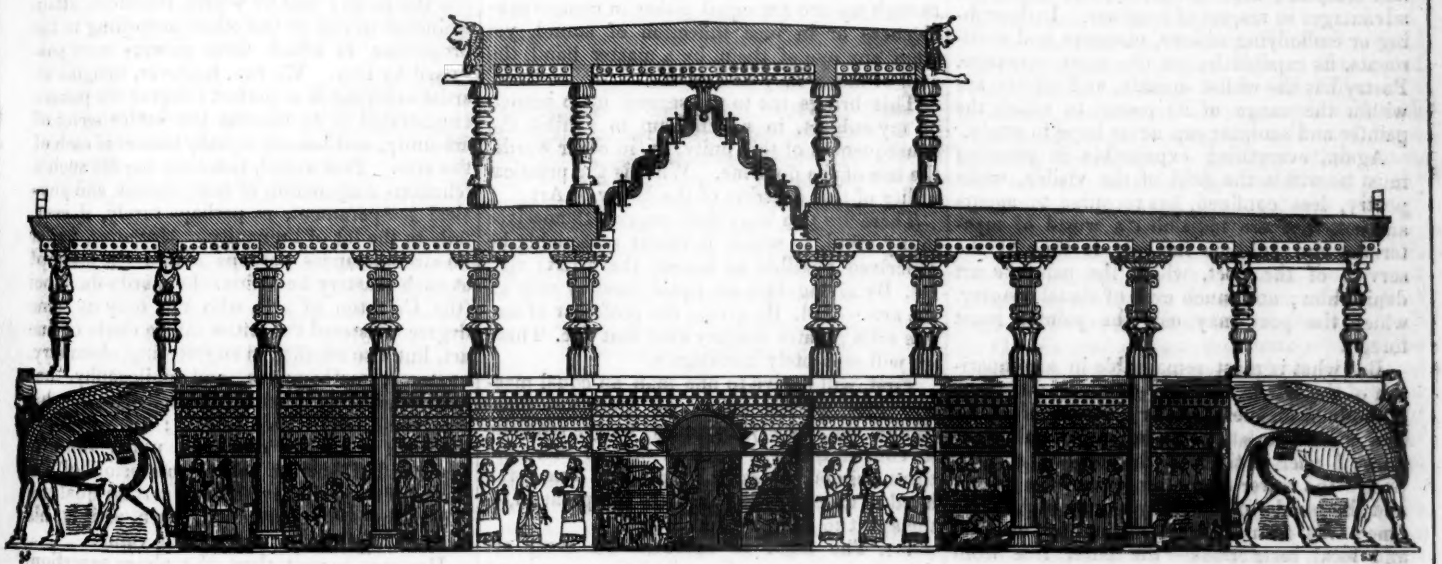

Fig. 2.—SECTION OF PRINCIPAL ROOMS AT KHORSABAD.

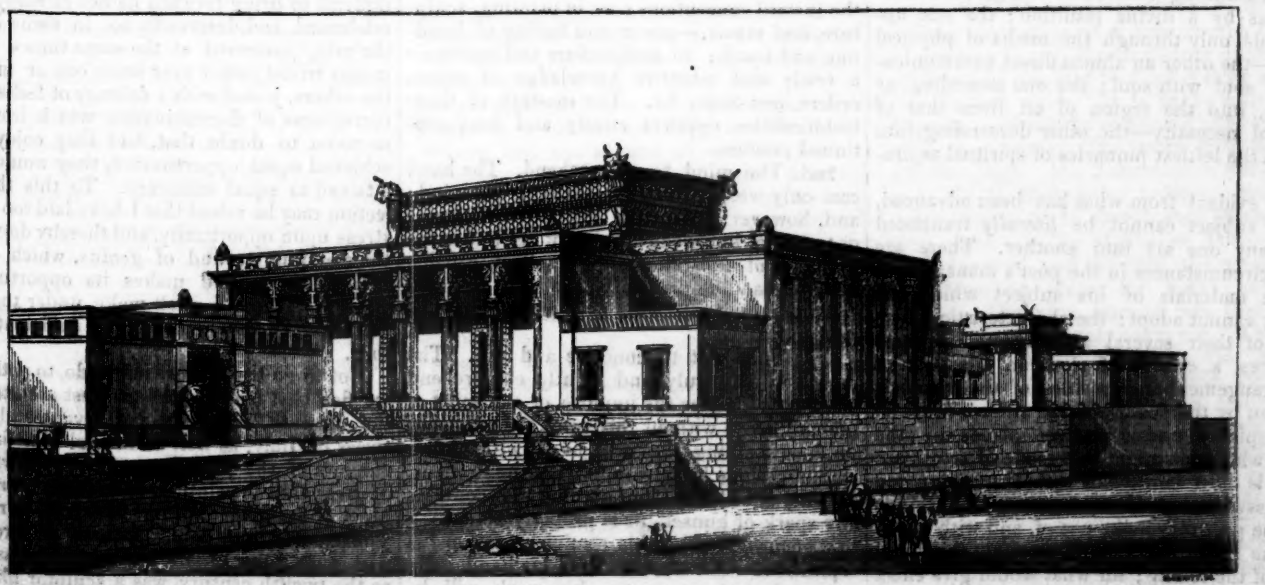

Fig. 3.—RESTORATION OF HALL OF XERXES, PERSEPOLIS.

THE UNITY OF ART.*

BARRY, the painter, in one of his lectures, denies, and I think justly, the truth of the ancient saying, that painting is a silent poem, and poetry a speaking picture. Painting, he contends, is rather a realization of poetry. Here is the imperfection of language: however expressive and perfect as a language, it fails in giving a precise idea or image of a complex object,—a task that painting can perfectly perform. What are words in describing a beautiful face or landscape, compared with the pencil? Many are the cases in which, while one must hopelessly fail, the other is triumphant. Moreover, the difficulties of execution are greater in painting than in poetry: power of conception, or the inventive faculty, is more indispensable to the poet than to the painter; but the latter requires more accurate knowledge of the different objects embraced by his subject than the poet, and greater elaboration is necessary to represent them on canvas, in lines and colours, than to describe them in words. It might, perhaps, by some, be concluded that, for the same reason, the difficulties of execution in sculpture are greater than in painting. But, though a more intimate acquaintance with the form of objects to be represented in sculpture is doubtless requisite, this necessity is more than counterbalanced by the sculptor having fewer elements to arrange: the difficulties of combining breadth of light and shade with harmony of colour, in painting, render the demand upon the intellect of the painter far greater than any for which the sculptor must prepare. But, if the execution of a conception is more perfect in painting and sculpture than in poetry, the latter has advantages in respect of compass. In describing or embodying actions, manners, and sentiments, its capabilities are the most extensive. Poetry has the widest domain, and effects are within the range of its power to which the painter and sculptor can never hope to attain.

Again, everything expressible in painting must be within the field of the visible, while poetry, less confined, has recourse to agents and acts that are invisible: a world of mysterious and sublime imagery is thus at the service of the poet, which the painter's art denies him; and much even of visual imagery, which the poet may use, the painter must forego.

But what is most remarkable in a comparison of the arts is, that the extremest difference in mode of manifestation or diversity of operation should exist between the two elder ones: I refer to those of the architect and the poet,—the rearer of the temple and the palace, and the builder of the lofty rhyme in Apollo's fane; the former hemmed in by material and local restrictions—the latter free from both: the one shaping out its rules through the obstacles of arbitrary requirement—the other exhibiting the order and grace of harmony as by a divine intuition; the one appreciable only through the media of physical sense,—the other an almost direct communication of soul with soul; the one ascending, as it were, into the region of art from that of physical necessity—the other descending, into it from the loftiest pinnacles of spiritual aspiration.

It is evident from what has been advanced, that a subject cannot be *literally* translated from any one art into another. There are many circumstances in the poet's management of the materials of his subject which the painter cannot adopt: the characteristic differences of their several arts dictate, in most instances, a change of plan, an alteration of the arrangement and position of the materials as given by the poet. Or the subject must be contemplated under another phasis by the artist, who must adopt that mode of treatment which is most consonant with the nature and compass of his art. He must give up many things that the poet may make use of, and with effect. Nay, he must sacrifice, if needful, the literal truth of the reality; for what would give effect in poetry would take from it and hide or interfere with expression in painting and sculpture: this is frequently the case in the matter of drapery, which, in poetry, is but an ethereal veil; for the poet's imagination has been behind it, and he describes what in sculpture and painting its folds would conceal. There are ideas and sentiments that could be expressed in all the five arts: they might be put in words, in colour, in relief, in structure, in sound; but though a competent mind would recognise them through all their vestments or disguises, yet the subject, being thus differently expressed, would itself be modified by the peculiarities of each organ of expression; and the proof of any one of these results being correct is, that it would call to memory and illustrate the rest. Beethoven being once asked for an explanation of one of his symphonies, replied, "Read 'The Tempest.'"

Upon the whole, poetry is the most excellent of the arts, and the true bard the most illustrious of artists. The painter, and sculptor, and architect, and musician are potentates in their own right; but they must yield the palm of superiority to him,—the Coryphæus of the harmonious and immortal band.

Thus it will, I think, be seen that, however varied its branches, art is one—an unity in diversity—one spirit working in different ways, and manifesting itself under various similitudes; and that the arts are different external phases or expressions of one soul—divers tongues uttering the same truths—variations on the great lyre of one celestial air. Art at the surface only is varied, ramified into branches of different lengths and varied calibre, unlike to the senses: at the centre it is unity of cause—one essence. Like different musical instruments, though they are not all of the same compass nor perfection of intonation, though no two are equal either in comprehensiveness or in nice inflection of sound, yet from any one of them, by a master hand, the soul of music may be drawn.

This brings me to the second main branch of my subject, in which I am to exhibit the consequences of this unity, or, in other words, the use of the doctrine. What is the practical utility of this doctrine of the Unity of Art?

There are two ways that suggest themselves to my mind, in which it might reasonably be conceived possible to benefit the artist; viz., 1st. By giving him an equal mastery over all the arts. 2nd. By giving the professor of any one art a greater mastery over that one. These we will separately investigate.

First, will it give to one man an equal mastery over all the arts? As there are three things, viz., variety, harmony, unity, requisite to constitute a true work of art, so there are three things necessary to produce one,—the hand to execute,—the mind to comprehend,—the spirit to conceive and love.

1st. The hand to execute. In every art there is an amount of manipulative power and technical knowledge, without the mastery of which no outward expression can be given to the inward conceptions; as, in painting, sculpture, and music,—power and facility of handling and touch; in architecture and poetry,—a ready and retentive knowledge of styles, orders, measures, &c. The mastery of these technicalities requires steady and long-continued practice.

2nd. The mind to comprehend. The hand can only work effectively through the mind; and, however perfect the manipulative power or technical knowledge, unless it act under the guidance of a discriminating intellect, capable of understanding principles, the issue, however elaborate in itself, will, as a work of art, be null and void.

3rd. The spirit to conceive and love. The mind can only truly and rightly comprehend when acting under the impulse of the spirit of life and love: without this spirit the artist can produce nothing that will live: with understanding alone he may reproduce the Romans, Greeks, or Italians,—but nothing that contains any spark of himself, or is properly his own—that enshrines either his reminiscences or his aspirations—can emanate from his hand. He cannot invent or create,—his work will be but coldly correct; it will possess no vitality or poetic fire, and can have no intrinsic value.

Of these powers of hand,—mind,—spirit,—the different arts require different degrees, *i. e.*, they differ from each other as to the necessary proportion of these powers: in one, feeling will be most wanting; in another, intellect will preponderate,—the rest being in abeyance. Poetry draws most upon the intellect,—music on the feeling: in these arts the mechanical part compared with the intellectual and emotional is as nothing; while, perhaps, the greatest and most complete combination of the mechanical with the intellectual that anywhere exists, is seen in paintings. According to the proportion, therefore, in which these qualities exist in the artist, is he fitter for one than for another; or the man that is possessed of a nearly equal amount of these powers is determined in his choice by circumstance. Architecture or painting may hold out bread; poetry, (a well-founded surmise) withhold it; or circumstance may rob one art of a follower, and give him to another. Of this several instances could be given. Circumstances generally call louder for one than another: London is burnt down: a city is to be rebuilt; and the genius of Wren, whose choicest offerings have hitherto been brought to the shrines of philosophy and the mathematics, becomes chiefly consecrated to architecture.

But if the different arts require these qualities in different proportions, then few men, under the most favourable circumstances for an uniform development, could be equal in all: an artist might have sufficient of each to be a proficient in all, but he would shine out more brilliantly in one than in another—in the one to which the proportion of his qualities was the nearest approximation,—supposing him, at the same time, equally devoted by study and practice to all; and he would, therefore, attain eminence in one or the other, according to the proportion in which these powers were possessed by him. We can, however, imagine an artist enjoying in so perfect a degree the powers enumerated as to possess the entire secret of art-unity, and become equally master of each of the arts. This would, however, require such a felicitous conjunction of time, means, and physical temperament, as perhaps rarely, if ever, falls to the lot of humanity. Moreover, under no circumstances perhaps would the attempt at such mastery be politic. Leonardo da Vinci (the Crichton of art), who not only in some degree mastered the entire magic circle of fine art, but also excelled in engineering, chemistry, anatomy, mathematics, and philosophy, has been blamed by all subsequent artists for his non-perseverance as a painter: his versatility has been a subject of regret, under the persuasion that had he taken possession of the one art, he would have carried certain qualities of that one art to perfection, when, as it is, his works are of comparatively little value.

However correct, then, the above assertion, it is not in our power to cite an adequate example of its practicability; but it would not be difficult to bring forward names of many who, celebrated, and deservedly so, in some one of the arts, possessed at the same time a by no means trivial power over some one or more of the others, joined with a delicacy of feeling and correctness of discrimination which leaves us no room to doubt that, had they enjoyed or achieved equal opportunities, they would have attained to equal eminence. To this the objection may be raised that I have laid too much stress upon opportunity, and thereby destroyed the standing ground of genius, which works by inspiration, and makes its opportunities. Remarks which I shall make under the next head will, I trust, be deemed, a sufficient reply to it.

Not to go back, as we might do, to antiquity, we find that many of the greatest architects of the fifteenth, sixteenth, and seventeenth centuries of Italy, as well as several of their forerunners of the preceding ages, gave evidence of great skill in painting, or sculpture, or both. Most of the great restorers of architecture were painters and sculptors. Buono, the architect first named by Vasari, and who lived as early as the twelfth century, was a sculptor likewise, as was also one of the architects of the Campanile at Pisa. Brunelleschi, Palladio, San Gallo, Sansovino, and Ammanati, also exercised the chisel of the sculptor along with the

* See page 116, *ante*.

scale and compass of the architect; and Alberti, Bramante, and Vignola, and many others, embodied their visions of beauty on canvass as well as on stone;* while many are the great painters and sculptors who were inspired in a high degree by the genius of architecture, and have left works in that art which would alone have gained them renown: among these the names of Giotto, Michelangelo, Raffaello, Giulio Romano, Vasari, Polidoro, Domenichino, Algardi, Bernini, and Carlo Maratti, are conspicuous: indeed, most of the painters of the Florentine school were proficients in the sister arts: Michelangelo was employed by Pope Julius II. in the triple capacity of architect, painter, and sculptor; he was also a poet: Domenichino was appointed by Gregory XV. architect of the Apostolic Palace: many professed all the three branches, and are called by all three at the present day.

The love and taste, also, for music and painting, to an equal degree, have in many instances centred in the same person. Handel, who first gave to the sacred volume the celestial voice of music, was a lover of pictures, and, for many years before his death, frequented, for the sole purpose of viewing them, all collections for sale: Correlli was also an enthusiastic admirer of the pictorial art: Geminiani, in the latter years of his life, was absorbed in painting, which he declared he loved better than music: Leonardo da Vinci, Sir Godfrey Kneller, Domenichino, and many other celebrated painters have been no less excellent in the practice of music: Guido Rheni was celebrated for his skill on the flute: Du Fresnoy was poet and painter: Milton, it is well known, had a fine ear for music; and Sir John Vanbrugh, the architect of Blenheim House and Castle Howard, was a popular poet and dramatist.

I believe, in short, it will be found that an artist would more readily excel in corresponding qualities of all the arts, than in all the qualities of one art; *i. e.* that the chain of connection is stronger between these similar or analogous departments of different arts, than between the different departments of each art. Success in the latter demands an exertion of a greater variety or extent of mental powers than in the former, which requires the same identical faculty for their management. This will explain why, though the greatest artists excelled only in one quality of an art, so many successfully attempted the mastery of a plurality of arts. We have Michelangelo eminent in design; Raffaello in expression; Correggio in harmony; Rembrandt in breadth; Titian in colour; but eminent in these only, while the two former, and many others, were also great in other of the arts of form. The truth is, it is in corresponding qualities of different arts they excelled: Michelangelo's forte was design, and his greatness in this manifested itself not only in sculpture, but in painting and architecture.

Our second inquiry is,—Will it give the professor of any one art a greater mastery over that one? In the production of a true work of art, the three powers of hand, mind, and spirit before enumerated, move in unison, and the work completed is the naturally resulting expression of that unison, just as the common chord in music is the expressed result of the sympathetic harmonic vibrations, resulting from the given sound of the primary or base note. But, in tracing the history of individual artistic progress, we meet with such continuous vibrations of circumstance and power acting and reacting one on the other, that, if we leave out of our consideration the doctrine of the unity of art, we are driven to the conclusive dilemma, either that circumstance is the director of art, or that art is the dominator of circumstance—a conclusion in which, from the constant recurrence of the extremes of its vibrations, nothing is concluded; for scarcely can we cite an instance of art-growth under an atmosphere of favouring circumstances, but the very exertion of the memory necessary for such purpose calls to mind some opposite instance of art-power or genius, forcing its way through every obstacle and discouragement,—

> "Breasting the blows of circumstance,
> And grappling with his evil star."

From this dilemma the unity-of-art doctrine, I think, frees us, by teaching, that in what manner soever the vital germ may originate (and this is a mystery beyond the mental horizon), having been once implanted, its inevitable tendency is to the light. The mind, in this respect, resembles many or most plants: set a plant in the recess of a window, and it grows towards the nearest window pane or compartment through which the light enters: cover that pane or opening, and it grows up and curls over it to the light above: screen it from the direct light, it grows towards the reflected; and so with the art-soul: if circumstance put out the eyes, and say, "Thou shalt not *see*," the art-soul perchance *hears*, and a musician is born; or it *thinks* and *feels*, and the poetic fathers hail the advent of another son; or does circumstance, less utter in her proscription, lay a forbidding hand on colour, and say, "Not these:" the art-genius grows towards form, perchance, and instead of a Titian or Murillo the world gains a Canova. Or, again, does circumstance hem round the art-soul with certain mechanical requirements and formularies of style suggestive of an architectural career: it rises still to the light, and grows up an Ictinus or Palladio.

In fine, as the plant, so long as it retains its vitality, grows under, or round, or through every obstacle, and still towards the light, making its way wherever light appears, so does the art-genius grow up through whatever avenue or crevice circumstance has left open, and still into the life of art; and, moreover, as with the plant, so with art—the development of the innate life is the ultimate destruction of the circumstantial obstacle: a sheet of pasteboard, by excluding the light, may give the growth direction to the upspringing acorn; but let the young oak once feel his innate strength and forest dignity, and what shall hamper him then?

> "Light is light which radiates,
> Blood is blood which circulates,
> Life is life which generates."

And many-seeming life in art, as in all else, is *one;* and as the planets, though shining with a different hue, shine in the reflected splendour of one central sun, so do the arts, through their respective media, give back a reflection of the glory of the central unity of ART; and as the astronomer is guided and strengthened in his optical deductions from planetary observations, by his knowledge of the source of light, so should the follower of any one art derive power and clearness of insight from a perception of the centering unity from which all the arts sprang, and to which they all tend.

SAMUEL HUGGINS.

* There is, perhaps, no art that is honoured by a wider circle of amateurs than painting: as far as my observation has extended, but a small proportion of architects are of the number. It would be well if it were otherwise, for architects would certainly find their account in the study of painting, and, indeed, of sculpture, but more particularly of the former. The study and exercise of painting can be but of little or of no use to the lawyer or merchant in his profession; but they must be of the greatest use to the architect. The three arts of form can, perhaps, never be united again in the mind and hand of one man; but the study of painting and sculpture could well be combined with that of architecture in forming the mind of the architect: no time devoted to these branches would be lost: every step of his progress in them would *tell* upon his artistic discernment and capabilities. He would acquire a greater grasp of thought,—a greater breadth of mind: it would bring him nearer to nature, the prime source of his art, whether in the study of form, chiaroscuro, or colour, and, teaching him the right use of precedent, prevent it having undue hold upon his mind. Few architects, I fear, in laying down the general plan of a building, or in choosing the principal forms, are sufficiently influenced by considerations of breadth of light and shade, yet it is as absolutely necessary to the production of an edifice worthy to be classed with works of art, as it is to the composition of a picture. Without attention to this subject, there can be no brilliancy or effect in any part, nor repose for the eye. Chiaroscuro is the very life of architecture: let provision for it be neglected, as is too often the case, and the building is an architectural nonentity, however liberal on its surfaces has been the hand of the decorator.

I believe that complete detachment of any one of the arts is unphilosophical, and should not be permitted; that it is the worst way of arriving at a clear knowledge and full mastery of principle. I believe, too, that the painter and sculptor would acquire an advantage in a study of architecture: besides the light it would throw upon their own arts, some practical knowledge would be gained which would be found useful in most walks of the artist. But the advantage these would reap from a study of architecture would not be equal to that gained by the architect from a study of painting and sculpture. I believe, in fine, that one of the best methods that could be devised at the present day to revive the somewhat drooping powers of architecture, and give fresh impulse to its career, is connecting it more with painting and sculpture. Sir Joshua Reynolds's eulogy on Vanbrugh was chiefly based on the fact that he composed like a painter. Moreover, the knowledge of these arts would enable the architect to see how all three could be most advantageously united in the formation of one grand work; for they are all essential to a complete building, as a knowledge of them, more or less, is essential to a complete architect.

At the same time, it must be observed that no art should be governed by another. It is for a greater union of the arts that I contend, not a subjection of one to its fellow: they are to stand in sisterly relation, not in that of mistress and servant. There have been times when architecture was governed by painting and sculpture, and its spirit often languished under the yoke. Painters are too apt in building to sacrifice to the picturesque or other qualities peculiarly desirable in painting, and most consonant with its spirit, to the marring of the innate beauty and greatness of architecture.

I know that modern refinements have increased the extent of scientific knowledge which it is incumbent upon the architect to acquire. Yet the fine art department must not suffer on this account. We must, by every available means, secure the power to express our sentiments and give utterance to the ideas and feelings of the time in our works, and thus maintain the position, and support the dignity, of architecture among the arts of design.—S. H.

FIRES IN THE CITY.

THE frightful loss to the community caused by constantly recurring fires, will, it is to be hoped, gradually force upon owners and builders the necessity of adopting modes of construction best adapted to prevent such costly catastrophes as those we now so often see. Only a few weeks ago we were gazing into the extensive ruin in Mark-lane, and now there are two other immense gaps so caused: one in Tooley-street (an enormous warehouse), and the second in Paternoster-row (a tallow-melter's).

In each case it is through mercy that the fire did not further extend: had it done so from Paternoster-row, our metropolitan cathedral and architectural glory might itself have fallen a prey to the flames.

The area of the warehouse in Tooley-street is very large, and, looked at from the top of the adjacent building, filled with fallen iron columns, and charred timbers, sprinkled with half-burnt hops, looking like gold dust, has a striking appearance. Amongst other points, the necessity for enforcing those clauses of the Buildings Act which limit the *size* of such buildings is made evident.

An adjoining warehouse belonging to Mr. Goodchild was saved by what at the moment doubtless seemed an annoyance. Some time ago the owner of the destroyed building built a 4½ inch wall against the south wall of the former to block up some windows considered to be improperly formed in it. If this had not been done, the second warehouse could scarcely have escaped destruction. Such incidents should prevent us from repining. Who can foresee results?

The extent to which the upper part of the front wall of the building that is burnt is forced outwards by the heat is so great that it can scarcely be believed.

NOTES IN THE PROVINCES.

THE chief stone of a new church in course of erection in the Marsh district of the parish of Stratford was laid by Lord Ashley on Tuesday in last week. It is to be called Christ Church, and will be composed of brick, faced with rag stone. The spire will be about 100 feet high. Mr. Johnstone is the architect and Mr. T. Burton the builder. Schools in connection with the church were finished some time since.——The Maidstone Town Council have received and adopted the report of the committee on plans for baths and wash-houses. The plan selected was that of Mr. Whichcord, the county surveyor. The buildings are to be erected in the Fair Meadow, the front elevation facing towards the bridge. There will be three first-class and fourteen second-class bathing-houses for men and six for women; three private baths for gentlemen and three for ladies, at suitable prices; a swimming-bath, containing 14,000 gallons of water, and fitted up with twelve or more dressing-boxes. In the washing department there will be sixteen stalls, with tubs, drying-closets, vessels of boiling water, &c.: the cost, it is supposed, will exceed 4,000*l*. The work, however, will be done by contract, and the usual specifications are being prepared. Owing to arrangements suggested by the town-clerk, according

to a local paper, there will be no addition to the rates in order to realise the requisite expense. ——The subject of erecting a new townhall, public rooms, and a corn exchange at Hastings is under consideration of committees of the town council and others who are to confer on the subject.——The new district church of Holy Trinity, Bracknell, was consecrated on Wednesday in last week by the Bishop of Oxford. The church is a small structure in the Pointed style, consisting of a nave and transept, and chancel, with a spire: the external ornaments and decorations are numerous, but within, the building is very plain: the roof is open and of carved oak beams: the sittings are open and designed to accommodate 300 persons. The architects were Messrs. Coe and Godwin.—— The chancel and other parts of Banwell Church have been renovated. The whole of the windows have been filled with stained glass: three of them are obituary windows.—— A monumental cross, to be erected in Malpas churchyard, has just been completed by Mr. Bigglestone, of Church-street, Hereford, from a design by Mr. Thomas Cranstone, architect: it is about 14 feet high. The style is of the Decorated period (*circa* 1350). A pierced cross-flory, with the ball flower ornament surrounding the centre opening, is elevated upon a capital ornamented with ivy leaves, which rests on an octangular shaft, rising from a truncated cone, on one face of which is the inscription in Lombardic character. The base of the cone is surrounded with a circle of ball-flowers; and the angles of the cone terminate upon the shaft in carved finials.—— The *Hereford Times* suggests that the great west window of the cathedral in that city should be filled with stained glass by the Bailey Testimonial Committee, in fulfilment of their trust. A serious defect in this noble edifice might thus be obviated. The centre trefoil light in the eastern end of the choir is to be fitted with a painted window, to which purpose a sum of 150*l.*, placed at the disposal of the late Dean Merewether and Canon Huntingford, is being applied. "We some time ago suggested the erection of a memorial window," says the paper just named, "to the memory of the lamented clergyman, but for whom this glorious fabric would probably have, ere now, become a heap of ruins; and we are happy to learn that the idea had also occurred to some members of the Merewether Testimonial Committee. It has been adopted, and a window—at a cost of about 400*l.*—is now in course of execution." The works for putting the Cathedral-close, which has long been an eye-sore, into something like order, have again been set in motion, a number of workmen being employed in the immediate vicinity of the Dean's residence. —— The Pontypool waterworks are progressing rapidly, superintended by the engineer, Mr. Hardie. The contractor, Mr. Farmer, has laid the pipes in the principal streets; and it is expected that the work will be finished for opening by 1st May.——The want of adequate accommodation at Nottingham for agriculturists lately induced the Midland Railway Company to resolve on building a warehouse large enough to contain 14,000 quarters of corn. They advertised for a builder to erect one eight stories high, with room underneath to allow laden wagons to enter under cover with their freight. Mr. George Thompson, builder, of Derby, obtained the contract to carry up such warehouses, 110 feet in length by 75 feet in width, the foundations to be formed of stone and concrete, the walls of brick, &c. The buildings are now in progress, to be finished by July next. Nearly one million and a half of bricks, besides other building materials, will be consumed inthe erection and finishing of these great stores.——The church of St. James, Ogley-Hay, is progressing rapidly towards completion. The amount already subscribed exceeds 1,600*l.*, but 2,200*l.*, at least, will be needed. Mr. Minton has offered tiles for the chancel floor, and other presents have been made, besides money, towards the work.—— It has been determined to erect a new workhouse at Wakefield.——The Grimsby docks are advancing without loss of time. The walls of the two locks will soon be finished, and the top-stones of the dock-walls brought on. Several of the massive oak-gates are on the eve of completion. Excavations for the piers are going on rapidly: nearly all the foundations are in. Near the locks, the arches from pier to pier, for the dock walls, are proceeding, as are also the internal excavations for the docks.——The Bishop of Durham has given 50*l.*—a second donation—towards the restoration of Rothbury Church.——The centre tower of the venerable ruin of Lincluden College, to which, until recently crowned by a vigorous young pine, it owed so much of its picturesqueness, has fallen, according to a Dumfries paper, from the foundation, and the pile to the north-west is in a very precarious condition. ——Active measures are in progress for the erection of public baths and washhouses at Glasgow, although the Act facilitating such erections does not as yet apply to Scotland. Upwards of 800*l.* have been subscribed, and mostly realised. The council have agreed to give the subscribers a site on the public green, but have, rather inconsistently, if not also suspiciously, refused to give any title to the site, which accordingly has not been accepted. ——A proposal for erecting a new Roman Cathedral at Nether Buckie, on the borders of Banff and Morayshires, has at length assumed an active shape, the contract having been prepared by Messrs. Reid, of Inverness and Elgin, architects. The new building, says the *Inverness Courier*, will rival the architectural glories of some of the other religious buildings of the Church of Rome in Scotland, now slowly mouldering into ruins.——It has been resolved by the Deacons' Court of the English Free Church at Inverness, that the new church projected there shall be erected according to the original plan submitted by Messrs. Mackenzie and Matthews, of Elgin, architects. The design has been engraved. The spire will be 130 feet in height.

ENGINEERING AND ARCHITECTURAL DOINGS IN IRELAND.

THE unfinished new road from the sea at Ballaghkeene to Enniscorthy is to be completed: a new bridge and the necessary gullets are to be erected on same: the quantity of work to be executed in the roadway will be about 380 perches: the probable cost will be 570*l.* The new intended road at Bargy, leading from Enniscorthy and Taghmore to the new pier of Kilmore is to be completed: it contains about 1,637 perches, and the amount will not exceed 1,709*l.* The unfinished works on various other new roads are also to be proceeded with in the county of Wexford, and plans, maps, and specifications have been prepared by the county surveyor for tenders.

The contractor for the Waterford and Limerick Railway, Mr. Dargan, has his workshops erected at Caher, and men will be immediately set to work on the line. This company has lately received from Government a loan of 300,000*l.*, and it is expected that the line will be open to Clonmel before the end of the present year.

The Poor-law Commissioners have decided upon erecting a new union workhouse at Kilmacthomas, and are about to receive tenders for the execution of the works, according to the drawings, &c. of their architect, Mr. Wilkinson.

The Poor-law Guardians of Clonmel have determined to erect a new workhouse there, and have advertised for a loan of 10,000*l.* for that purpose.

Mr. Dargan, the railway contractor, has engaged a great number of persons, who are at present working on the Waterford and Limerick line, between Caher and Clonmel. The railway is intended to pass over part of the Cashel-road, and also over the river Lim. Three bridges of large span will be constructed for this purpose.

The road leading to the station of the Midland Great Western Railway, at Ballinasloe, is being widened, under the direction of Mr. Kempster, county surveyor, and Lord Clancarty intends building some first-class houses along the road. The town commissioners have determined to extend their main gas-pipe to the railway.

The Dean of Waterford is about to make improvements in his deanery: the church-yard in the Cathedral-square is to be inclosed, and the apartments for clergymen's widows to be remodelled.

The castings for the great bridge over the Wye, at Chepstow, for the South Wales Railway, as we have already noted, are in progress of execution by an extensive firm in Dublin, which is the first instance of castings of magnitude being made there for similar works in England or Wales. The Irish Engineering Company are the parties referred to, and they have lately constructed all the castings for the Brighton Railway Company, required in the extension of their passenger terminus at London-bridge, and upwards of 200 tons of castings have been exported to England from their foundry within the last two years.

The large viaduct over the valley at Craigmore (a description of which has appeared in THE BUILDER), Belfast Junction, remains to be completed, but the works have been far advanced. The quantity of masonry already executed on this viaduct amounts to 128,000 cubic yards, the entire being of the best white granite. In consequence of the uncertain strata on which the viaduct is being erected, excavations had to be made to the solid rock, for the piers and abutments, so that upwards of 30 feet of the building is under-ground. The highest part of the viaduct will be 140 feet above the level of the stream. The engineer-in-chief is Sir John M'Neill.

The directors of the Newry and Enniskillen Railway have made arrangements with Mr. Dargan for the construction of a junction line, with the Dublin and Belfast Company, at Gorah Wood; and it is to be completed in every respect, exclusive of rails and sleepers, for the sum of 11,000*l.* The contract for the portion of the Londonderry and Enniskillen Railway, between Strabane and Newtownstewart, has been taken by Mr. M'Cormick, and the works are at present in active progress.

A new church is to be erected at Ballovey, Mayo, for the Protestants of that district.

Extensive alterations and additions are to be erected at the Roman Catholic church of St. Francis Xavier, Dublin, according to the drawings of Mr. J. B. Keane, architect.

At a competition in Philadelphia, the designs of Mr. J. T. Mahony, of Cork, architect, for the proposed St. John's Orphan Asylum, were lately received, and the premium of 500 dollars was awarded for the same.

IRON BUILDINGS NOT A NOVELTY.

SIR,—It is a great mistake to suppose that buildings of iron are a novelty in England. This class of building has been known in our colonies for many years. In 1844 and 1845 my own firm constructed in London, and afterwards erected at the Mauritius, under the superintendence of Lieut.-col. Lloyd, then the resident government engineer, a military station consisting of officers' quarters, 2,400 feet area; an hospital, 3,000 feet area; and a lazaretto, 5,200 feet area,—all perfectly fireproof, together with large covered tanks for supplying the station with water. The buildings having at that day something of a novel character, I will describe them: they consisted, first, of a cast-iron cill-plate, running entirely round the building, and this plate may either be laid upon a concrete foundation, a brick sleeper wall, or bolted to cast-iron piles previously driven for this purpose. Upon this cill were raised cast-iron stanchion-like uprights of letter H section, which at the same time formed the door and window jambs, and carried the wrought-iron plates forming the walls: on the top was bolted a cill-plate from which sprang the roof: upon the external and internal flanges of the stancheons were bolted wrought-iron flat sheets, forming, as it were, hollow or double walls of iron. The roof was of cast-iron, in a segmental form, spanning from wall to wall, but supported also in the centre by the columns and partitions, dividing and forming the rooms. The upper rib of this segmental roof girder was fitted with

wrought-iron purlins T section, and roofed with cast-iron plates in a similar manner to that so ably employed by Mr. Barry at the Houses of Parliament. On the bottom flange of the girder were fixed cast-iron ornamental bearers, which carried a wrought-iron sheet ceiling, thus dividing the ceiling into ornamental sunk panels. The apex of the roof was covered with a cast-iron ridge roll so as to keep out the weather, but so formed as to leave an open ventilating space the whole length of the roof, the object being, as in that hot climate the heat upon the roof would be so great as to rarefy the air in the ceiling space, to allow it to pass out at the opening left in the ridge roll, and to draw a succession of cooler and passing air through the hollow walls, which would thus tend to keep the rooms cooler than they otherwise would be. The desired effect was fully produced in these buildings, and they are now standing secure, notwithstanding the many violent hurricanes which they have encountered, and which are peculiarly incidental to that climate: even in England, in the height of summer, we could maintain a temperature some seven or ten degrees lower than in our brick-built offices. The sashes, jalousies, and doors, as they were dwelling-houses, were all made of mahogany to protect them from the white ant, and at the same time render them lighter in the hand than iron would be: with this exception, and the glass in the sashes, the whole of the building was of iron. HENRY GRISSELL.

FOREIGN INTELLIGENCE.

Anniversary of the Cologne Cathedral Building Association.—On the 17th February the Committee of the above Society held a meeting in the large Town-hall, for commemorating the day of its founding in the year 1842. The president, M. Esser, stated what had been done since for the restoration of the splendid building, mostly by private contributions, in a turbulent and disquiet period, and urged them on to further exertion, as he hoped that three years hence the cathedral would be completely roofed in, the temporary most incongruous wall separating choir and nave removed, and thus the vast interior appear full in all its grandeur. He requested the meeting to state their opinions how this aim could be best achieved.

The Art-Academy of Düsseldorff.—The new Secretary of State for Public Institutions of Prussia, M. de Raumer, has, in an especial note addressed to the above Academy, expressed his determination to foster and encourage that establishment to the best of his abilities. Accordingly, the Rhenish papers have put forth a brief *exposé* of the claims of the Academy on public support. The Rhenish provinces have, in previous epochs, produced specimens of art which can vie with any produced in other parts of Germany—nay, Europe. The recent times have been equally fertile for Rhenish art, as Beethoven and Cornelius, in music and painting, struck out new spheres and systems for these art branches. The Academy of Dusseldorff has excelled many others far better supported and founded.

Permanent Art Exhibition at Paris.—Circulars have been lately issued for the holding of a meeting of the painters, sculptors, architects and engravers residing in Paris, for the purpose of establishing a permanent exhibition of the works of living artists. It is to begin a few days after the annual public exhibition, and to close before the opening of the latter. It is proposed that half or quarter of a franc should be charged as entrance fee, and that the tickets be used for a lottery. The money obtained for these tickets should be employed in buying objects of art, which would be then put up as lots, &c. The Paris artists hope, that by this expedient they would increase their means of publicity, without the shackles of any committee, and also find a more extended sale for their works.

Excavations near the Forum Romanum.—Amongst the oldest ruins of Rome are those huge substructures of the *Tabellarium*, or states archives, which lie at the hill of the capitole above the Forum. This building was erected by Lutatius Catulus, A.U.C. 676. At present the palace of the senators is built on it. Some years since, excavations were made in this locality, and a staircase in good preservation was discovered leading down to the Forum. The municipality of Rome have, of late, ordered new excavations, under the direction of M. Vescovati, which, being made on an opposite part of the ruins, have led to the discovery of another staircase, which also descends to the Forum. It ended behind the so-called temple of Vespasian, at the building of which this entrance was probably closed. It is remarkable that the steps are quite new, and appear never to have been used. On one of the landing places, a cippus, made of peperino, has been found, on which the name of Consul Fannius is inscribed. On account of this material being seldom used but in the early part of the Republic, some of the Roman antiquaries have referred this name to Fannius, the author of the famous law against luxury, A.U.C. 593; but more accurate research has proved that it means a colleague of Consul C. Gracchus, A.U.C. 632.

Scientific Congress at Paris.—It is a novel feature of the French provincial societies that they assemble every year in general congress at the Luxembourg, Paris. On the 20th ult. the first meeting of this year's session was opened. A paper of M. Chennevière on the catalogues of pictures and statues of public collections, excited great interest, and led to discussion, the results of which will be important.

Great Dyke Works at Odessa Harbour.—These works, which have lasted since 1843, are now completely finished. Their chief object is to prevent the harbour from being filled with sand. It forms now a nearly square basin, with an opening of thirty fathoms, by which vessels may enter safely from the north-east. The new dyke is 144 fathoms long, 4 fathoms wide, and rises 1 fathom above the usual level of the sea, whose depth at the end of the dyke, and in the entrance, is 14 feet. The cost of the structure is above 100,000 silver roubles, and has been executed after the plans of M. Van Der Fleis, late engineer of the harbour of Odessa.

Order of the Concours for the great Prizes of the Academy of Arts, Paris.—Great prize *Engraving*: entry of articles, May 10; return, Sept. 1; public exhibition, Sept. 3, 4, and 5; decision by Academy, Sept. 6. Great prize of *Painting*, May 26, August 19; public exhibition, August 24, 25, and 26; awarding, August 27. *Architecture*, May 6, Sept. 13; exhibition, Sept. 17, 18, and 19. *Sculpture*, June 16, Sept. 8; exhibition, Sept. 10, 11, and 12; decision by the academy, Sept. 13. The prizes for the studentship at Rome, and the works which have obtained the great prizes, will be exhibited to the public from Sept. 28 to Oct. 5. The *national* awarding of prizes to the successful competitors (*couronnement*) at the Institute, will take place on Oct. 4.

THE IRON TRADE continues much in the same dull state as when we last noticed it. The mad system of making up for slack demand and unremunerating prices by increasing make and pushing a more extensive trade is still going on, so that superfluous stock cannot be diminishing even though others have the wisdom (a virtue of necessity in some cases, however) to reduce their manufacture. Its increase, under present circumstances, as remarked in the *Birmingham Gazette*, is a practice most inimical to all permanent improvement of the prospects of the masters as a class. The prospects of the pig-iron trade, says a Glasgow trade letter of last week, are at present most gloomy. Owing to the great production and the large stock on hand, transactions are altogether confined to the supply of the wants of founders and shippers. The prices are still lower than they were last week: those quoted are 42s. 6d. to 43s. The *European Times* quoted the prices of bar, pig, and other iron in the previous week as delivered in Liverpool, at—merchant bar, 5*l.* 5s.; nail rods, 5*l.* 15s.; hoop, 6*l.* 15s.; sheet, 7*l.* 10s.; Scotch pig, No. 1, 2*l.* 11s.; No. 1 pig, in Glasgow, 2*l.* 4s.

THE REFORM OF OUR NATIONAL COSTUME.

A SHORT time ago you published a very excellent address from artists and others interested on the subject, recommending a gradual change in the male costume of this country, from the inconvenient and unpicturesque one which at present prevails, to a style more in accordance with the objects of their art. I have no doubt that most people felt the justice and propriety of that appeal to good sense and true taste, and few, I think, will refuse their support to a prudent and well-digested plan of reform in this particular. But it appears to me that suggestions of what that reform should be, or at least should *commence* with, ought not to be left to tailors and hatters, who will neither be forward in beginning, nor have taste enough to carry out, what the proposers of this change are desirous of seeing done. It must, in my opinion, be the *artists themselves* who must suggest the changes they seek to effect, by putting forth graphical designs of such a modification of the present style as will be practicable at first; and I believe the best method of actually bringing the same into use, will be for the artists themselves to be the first to adopt their own designs. Let them, then, avail themselves either of a special pamphlet on the subject, with woodcuts of their ideas as to hat, coat, or any other part of dress they desire to alter in form and fashion, and then let them appear themselves clad in garments made according to these designs. If they are but more convenient and less absurd than what we now wear, let them not doubt their new modes will be speedily adopted by others. I fancy there are not a few who have already determined to work out small and unconspicuous reforms for themselves, and, among them, I have myself determined never again to buy a hat of the chimney-pot order. I should be glad to see what the artists would propose for the protection and adornment of my head; but, if they be not quick, I must work on my own design, and I shall, at all events, venture so far as to reduce the height by at least two inches, add to the brim in proportion, and give the profile a more graceful curve over the head. Pray, do what you can to get the painters and sculptors to make public their notions of what the reform in costume ought to be, as they have made public their wishes that a reform should take place. AN AMATEUR.

COLOUR IN NATURE AND DECORATION.

THE balance of complemental colours in the combinations of hues in landscape, or the various objects of nature, are seldom maintained by corresponding tints or hues of the same relative key and brilliancy, or confined to the narrow basis contained in the report of Mr. Crace Calvert's lecture at the Society of Arts. The arrangements of colours in nature, and the works of the greatest colourists, are infinitely varied by contrasts of tints and hues of different degrees of strength, the difference in force being compensated by the increased relative quantity of the lighter tints, or more subdued hues, by which the harmonic proportions of the three primary colours contained in the various tints and hues are restored. It is important in the investigation of principles that we do not fall into the same error respecting colour that Hogarth did regarding form, of mistaking an element of truth for the whole truth, and confining our admiration to a partial beauty. G. B. MOORE.

THE ARMY AND NAVY CLUB HOUSE, PALL MALL.

IF our readers will refer to page 518, of our fifth volume, they will find that in October 1847, we gave a perspective view of the exterior of the proposed Club, and a general description of the arrangement of the plan. The building being now completed,* we give some further particulars of the arrangement and decorations. We may first repeat that the architects were Messrs. Parnell and Alfred

* In the few days during which it was open to the inspection of visitors at the invitation of the committee, about 12,000 persons visited it.

Smith, who have produced for the club a commodious and elegant mansion. We shall take the apartments in the order in which the visitors were conducted through the building.

The entrance is by a *loggia* on the east side leading into a *vestibule:* from this is reached the *members' coffee-room* on the north, — an elegant apartment recessed in the centre. The dimensions of this room are 81 feet 6 inches by 30 feet 6 inches, and the recess is 8 feet 9 inches deep in addition. Of this room we give a representation. *The grand staircase* is 40 feet by 26 feet, and has two flights of stairs. An open fireplace is cleverly introduced beneath the first landing between the branch flights of the stairs. A saving of room is made, and a novel effect gained, by the access from the upper landing to the library on the one pair being made by means of a quadrant landing in the angle. Considering the height of the story, the stairs seemed to us somewhat short, and the railing of them might with advantage have been richer.

On the one-pair story there is a *writing-room*, 40 feet by 32 feet 6 inches, the fittings of which are of satin wood; the *visitors' drawing-room* 16 feet 6 inches by 25 feet 9 inches; the *members' drawing-room*, 23 feet 3 inches by 28 feet 3 inches; and the *library*, 49 feet by 28 feet 3 inches.

On the upper floor we have a *non-smoking card-room*, 15 feet 6 inches by 23 feet 3 inches; a *non-smoking billiard-room*, 24 feet 3 inches by 23 feet 3 inches; a *smoking card-room*, 26 feet by 18 feet; a *smoking billiard-room*, 24 feet 3 inches by 31 feet 6 inches; and the *smoking-room*, 39 feet 6 inches by 33 feet. In these smoking-rooms the great desideratum—ventilation—appears to have been attended to. Outside the smoking-room is a balcony and verandah, forming an agreeable lounge.

Following the prescribed route, the visitors descended a secondary staircase to the ground-floor to the *visitors' dining-room*, 45 feet 6 inches by 29 feet; and the *house dinner-room*, 30 feet by 20 feet. In the decoration of this apartment Mr. Sang has been successfully employed: the ceiling has an effective centre-piece, and the walls are divided into panels containing baskets of fruit, grapes, &c.

We dive to the *kitchen* (to which we will presently return) to say it is 40 feet 6 inches by 34 feet, and that the walls are lined, to a height of about 9 feet, with glazed Dutch tiles. Then ascending once more to the ground-floor, and crossing the front hall, the *morning-room* is reached; the size of which is 71 feet by 27 feet 6 inches.*

Besides the rooms enumerated, there are apartments for the officers and servants of the establishment, lavatories, and all other conveniences. And now, having thus given an outline of the general arrangements, let us speak a little more in detail of the decorations of each room.

The enrichments of the ceilings of the various rooms are all in *carton-pierre* and *papier mâché*, and reflect great credit on Messrs. J. Jackson, of Rathbone-place, by whom they were executed. They are beautifully drawn and modelled, in very high relief, and are sharp and crisp, as if cut by the hand. The ceiling of the coffee-room is divided into three parts, by a raised skylight in the centre: the end compartments are divided into coffers of irregular design. The whole of the enriched mouldings in the coffers afford the means of ventilation. The beams are panelled and enriched with guilloche and pateras in much relief. The ends are supported by consoles associating the walls with the ceiling,—breaking over the general entablature, which surmounts pilasters in scagliola, standing on pedestals. The compartments are filled in with flowers of particular freshness of design and energy of execution, avoiding the monotony so frequently seen of mere circular masses within rims of mouldings.

* The morning-room is the largest apartment, as being that in which most time is spent by the members. Again, the library is much larger than the drawing-room; and in this arrangement experience has dictated the dimensions in opposition to custom, for a far greater number of members of a club will be found in the library than the drawing-room. The library and the drawing-room are in some degree connected by the introduction of a large sheet of plate glass in the dividing partition.

Enrichment of the morning-room (where effect has been chiefly striven for) is carried out in admirable style. The ceiling consists of an oval and circles, enclosed by bands of foliage, fruit, and flowers, in very high relief: the spandrils are filled in with foliage. The cove, which is pierced for the windows of mezzanine story which does not exist,—a blot in the design,—breaks about 5 feet into the ceiling, as well as 4 feet 6 inches on wall, and is divided by upright bands (ranging with pilasters and trusses on walls) into panels, in each of which is a design of boys and foliage, with birds: the spandrils present birds and mouldings: the flowers down the bands in cove are very varied in design, and highly relieved.

The soffits of the lunettes are freely executed, and fresh in design and execution. The cornice below breaks over the pilasters, and runs across the window. On this are placed the window draperies by which the lintel is obscured.

The writing-room has a centre flower, with circular bands of enrichment, spandrils, and margins: the cornice round the room has a frieze composed of dolphins, tridents, shells, and bulrushes: the mouldings are highly enriched, and very clearly brought out.

The visitors' drawing-room, as well as the club drawing-room, with the library, are enriched in the style of Louis XV.: the ceiling enrichments in these rooms are highly relieved, particularly some bands of flowers over reeds, and alternating with foliage, &c.: the cove is richly ornamented, as well as the cornice: the walls of these rooms are panelled in a simple style.

The upper part of the principal staircase is surmounted with a large cove (sustaining a horizontal light), which is divided into compartments by bands, which assort with the pilasters under entablature. The angles of the cove contain shields in very high relief, enclosing the arms of the club, with palm and laurel and oak accessories. The principal feature in the staircase are some large caryatide figures, executed in entire relief, as consoles. The archivolts, mouldings, &c. are throughout of *carton-pierre* and *papier maché*. A string-course is continued from the level of the first-floor, in which a design of dolphins, shells, and bulrushes is introduced with good effect, gradating the enrichment to the more quiet tone of the lower part, which is simply panelled with bold mouldings and raised panels.

One observation in going over this house will probably occur to most visitors, and that is, the small extent to which any attempt has been made to identify the structure (by the decorations) with the services in which its owners and occupants are engaged.

Little or no colour is employed throughout, form being mainly depended on; and the aspect of some of the rooms is, therefore, colder than we should desire.

The furniture is handsome,—mostly of walnut wood, manufactured by Messrs. Gillow. The book cases which line the sides of the library are fitted up (we may mention as a useful hint) with spring silk blinds, which are pulled down in front of the books at night, or when dusting is going on.

The door from the staircase into the library is masked by blank book-backs, to range with the other cases; and here the wit of the club has been allowed to explode: the letterings present a series of jokes,—many of them very good ones, and will afford something to talk about to a new member. Let us take a few examples:—"Creak on Patent Hinges" is in its proper position, and so are "Handle on the Art of Turning," and the "Rape of the Lock." The "Law of Substitutes," the "Art of Deception," an "Essay on Woodbind," a treatise "*Sur les Sorties Imprevus*," and "Pasley on Passages of Communication," may all be found there; "Viner on Stoppages *in Transitu*," "Blackstone on Fictitious Entries," "*Le Livre Fermé*," and the "Blockade of the Sublime Porte," very properly come together; and there are six goodly volumes of "*Rien de Tout*,"—the only words of truth amongst them.

Considering the food for the mind, we must not be led to forget the provision that has been made for food for the body, so let us return, as we promised, to the kitchen.

The chief agent in the extensive cooking apparatus at this club is steam, which is supplied from one cylindrical boiler of wrought iron, and from thence is conveyed to the various steamers for dressing meat, fish, and vegetables of all descriptions: it heats the water in three *bains-maries*, for keeping hot sauces and soups of all descriptions without the possibility of their burning: it boils the whole of the water for the use of the kitchen, scullery, and offices: it maintains, at a high temperature the apparatus for cleaning the coppers; and it heats the various closets and tables (of which there are nine) that are used for warming the plates and dishes and keeping hot the *cuisinerie* when ready for the table.

The roasting apparatus consists of two open fireplaces,—one of six feet in width, for the cooking of the larger joints, &c.; and the other, a small fire-place exclusively for poultry and game.

The ascending current of air in the larger fire-place is made use of for working a revolving apparatus, consisting of four distinct movements, which are so arranged that any one may be worked quite independently of all the others, and at any distance from the fire, according to the size or kind of joint to be roasted. The great advantages of this roasting machine over the ordinary smoke-jack, are, firstly, that all spitting is avoided, and as, in this case, the spits would have required to be seven feet long, and of great weight, a very great saving of labour is effected, and the mutilation of the meat prevented; secondly, that the gravies of the various meats are preserved separately, and each is basted with its own gravy.

Great care has been taken to keep the various departments of the cooking distinct and perfect in themselves, thus: the chief cook has his hot plate and broiling stove, his stewing-stoves (to which in two cases gas has been added, rather as a useful auxiliary than a substitute), his *bain-marie* for sauces, and one distinct for soups, as well as a small tinned copper sink, with hot and cold water, and a large oven for baking.

The fish cook has a separate plate for broiling fish, a distinct *bain-marie* for the sauces, and steamers for boiling the various kinds. The stoves for broiling chops, steaks, and kidneys, which form a very material element in club gastronomy, are also kept quite distinct, and under the control of a separate cook. [What can we want with wives?]

The vegetable cook is confined to the scullery, where she has her hot plate for boiling the vegetables (which fire also heats an oven, in which the servants' dinners are cooked), and also her steamers for steaming them.

Each department of cookery is provided with its hot closet for heating the dishes, and also a hot table for dishing up the various condiments when ready for the table. There are also distinct departments with fixed washers, provided with hot and cold water for washing the china, the vegetables, and the coppers. The whole of these matters have been executed by Mr. Wm. Jeakes. The orders for dinners are passed from the coffee-room through a trunk to the clerk's desk in the kitchen, and are taken up by a lifting machine, by which means the dirty china, &c., are brought back. Communication of orders is also effected by means of speaking pipes from the clerk's desk to the various waiting-rooms.

On the mezzanine floor are the lavatories and four bath rooms provided with hot, cold, and shower baths, the whole of which are heated by a small boiler in the basement, which also warms several of the bath and dressing-rooms, and supplies a large closet for heating the towels and linen.

The carcase or shell of the building cost 18,500*l.* (Mr. Trego, contractor). The interior cost 16,500*l.* (Messrs. Smith and Appleford, contractors);—in all 35,000*l.*, exclusive of the fittings. The comparatively small plot of land on which it stands has cost the Club 52,000*l.*, and the total expenditure may be called, in round numbers, 100,000*l.*

THE COFFEE-ROOM, ARMY AND NAVY CLUB.—Messrs. Parnell and Smith, Architects.

STATE OF SOME OF THE LONDON ROADS.

THE infamous condition of parts of the New-road, and general bad condition of many of the metropolitan roads known more particularly as macadamised roads, is to be referred to the total want of anything in the shape of science displayed in their construction or reparation. What is put on one week is scraped off the next*: the result is lavish expenditure and imperfect roads; to say nothing of the wear and tear of horses and vehicles (no small consideration), resulting from the barbarous plan adopted of shooting broken pieces of angular granite upon the road, and leaving their ultimate consolidation a matter of accident. That roads should be made ready for traffic, and not left for traffic to make them, is, I take it, a first principle.

1. The surface of the road should present a flat ellipse: this tends to keep the road dry, and allows the sun and wind to have a greater effect in evaporation.

2. The entire road formation should not be less than 2 feet 6 inches in depth.

3. The whole should be drained, and form one cemented mass.

4. The upper surface should be dressed with the hardest stone, such as basalt or granite, in cubes not exceeding 2½ inches, grouted together, and left to consolidate.

A DISTRICT SURVEYOR.

*** And then, when all this has been effected, the water company's men will come and destroy it for you; and, as soon as the damage done by them has been patched up, a new gas company, or the Commissioners of Sewers, will probably find it necessary to walk in and disturb once more the road's equanimity.—ED.

TESTING THE EXHIBITION BUILDING.

SIR,—Will you permit me to say that the mode of testing the gallery floor last week, concerning which so much was said by the papers, is to my mind far from satisfactory, inasmuch as the inclined planes at each end of the beams formed struts to them, and converted the whole into a species of Queen-truss. I have no doubt that *the beams* are strong enough for their work, and so far as I know no question has ever been expressed with respect to them; but, Sir, the parts of the construction that have been objected to—viz. 1, *the insufficiency of the diameter of the columns*, causing inability to resist lateral pressure; and 2, *the insufficiency of the connections* of the beams with the columns, do not appear to have been tested at all; the model floor having been placed at a height of some 12 or 14 inches from the ground, leaving completely untouched the questions above alluded to, and besides not experiencing the vibration which there is in the real galleries 30 feet from the ground. Possibly the parts in question have been tested, though not in a public manner: if so, I shall be glad if this letter produce a reply to that effect.—B.

*** We received many letters on this subject last week, but avoided noticing them, not desiring to seem always in collision with those who have the conduct of the structure. We need not tell our readers any more than the parties themselves that the trial proved very little. We feel no surprise, like some of our correspondents, that the directors of the work made the experiment in question as a first step, but quite participate in their astonishment that it should be trumpetted far and wide through the press as a test of any value.

ARCHITECTS' BENEVOLENT SOCIETY.—We would direct our readers' attention to the announcement elsewhere, that the annual general meeting of this society will be held at the Freemasons' Tavern, on the 12th instant, when the chair will be taken at 3 o'clock.

LAMBETH RAGGED SCHOOLS.—The schools erected in Lambeth by the munificence of Mr. Beaufoy (and to which we have on other occasions alluded), were publicly opened on Wednesday last. We shall pay them an early visit.

* Chalk, lime, and fine gravel might be worked in: at present there are no binding ingredients.

CONSTRUCTION OF THE BORDER BRIDGE OVER THE TWEED.

INSTITUTION OF CIVIL ENGINEERS.

ON February 25, Mr. William Cubitt, President, in the chair, the paper read was "A Description of the 'Royal Border Bridge,' erected over the River Tweed, on the line of the York, Newcastle, and Berwick Railway," by Mr. G. B. Bruce.

This viaduct, the total length of which is 2,160 feet, and the extreme height 129 feet, consists of twenty-eight semi-circular arches, each 61 feet 6 inches span; and the whole is constructed of stone, with the exception of the inner part of the arches, which is of brick laid in cement. It is divided into two parts by a central abutment, which enables the land arches to be completed, and, along with a temporary timber bridge, to be brought into use for public traffic, before the completion of the river arches, which necessarily occupied a considerable period in execution, owing partly to very substantial coffer-dams having been requisite for the river piers, but principally to its having been thought advisable to pile the foundations of most of these piers, as the bed of the river was liable to be scoured away by the rapid stream. The piles, both of the coffer-dams and of the foundations, are mostly of American elm, as it was found that the heads of the Memel piles required to be frequently cut off and re-hooped, when driven by Nasmyth's steam pile-driver, which was almost entirely used, both on account of expedition and of economy; for it was proved, that whilst the hand ram only gave one blow in four minutes, the steam pile-driver gave sixty blows in one minute, and that the cost of the former was two shillings per lineal foot, whereas that of the latter was very little more than one shilling per lineal foot. It was also remarked, that the force was more advantageously employed in the case of the steam pile-driver, as, on account of the ram being heavier and the fall less, the piles were not so frequently split.

The piers had an ashlar facing, and were filled in with well grouted rubble, having occasional through courses of ashlar, and an ashlar tie in the centre of their width from top to bottom. Great care, it was said, was taken in the preparation of the mortar and the grout used in this work, and after a variety of experiments, the plan finally adopted was,—in the case of setting lime for ashlar,—to grind quicklime dry by itself, in a common mill, and then to mix it with coarse, sharp sand, screened out of gravel taken from the bed of the river, in the proportion of three of sand to one of quicklime: this was then put under cover until required. Lime to be used for grout was also ground dry, and along with it was ground slag from an iron furnace, then gravel from the river was mixed with it without being screened, the proportions being quick lime one,—slag three quarters,—and gravel two and a quarter. The mortar when used had absorbed a sufficient quantity of moisture from the atmosphere and the sand, to prevent its being too hot for use; and yet, as it had not been previously mixed with water and wrought into a paste, it retained its original setting power. This mortar required to be used very soft, and the stones to be well wetted, and as the sand was very coarse, thick joints were necessary, but in a few weeks it set as hard as Roman cement. All the lime used in this work was from the mountain limestone of the Scremerston and Lowich districts of Northumberland.

The centres, which were stated to have been of peculiar construction, were supported entirely from the piers, so as to prevent any accident happening, if the scaffolding were injured, either by the heavy floods of ice to which the river Tweed is subject in winter, or from the vibration caused by passing trains; as, when the idea was first entertained of having a temporary bridge, the intention was merely to add to the contractors' scaffolding, and to make it serve for both purposes. This intention was, however, abandoned, and an entirely separate timber bridge was erected, on the east side of the stone bridge, at a cost of 14,340*l.*

The total cost of the "Royal Border Bridge" was 120,000*l.* and of the whole contract, one mile in length, in which it was comprised, 207,000*l.* including an embankment, which had to be made entirely from side cutting, and which contained probably 760,000 cubic yards.

SEYSSEL ASPHALTE AT WOOLWICH.

AT the Royal Carriage Department, Woolwich, the authorities are working early and late to get the many alterations effected by the period of opening the World's Fair. Messrs. Fox, Henderson, and Co., are employed to do the extensive range of iron and glass roofs, and the Asphalte of Seyssel Company have contracted for the roadways through the several streets. In the application of this material a railway and engine are employed, which, running under the iron roofs above named, give the place the appearance of a railway-station.

DRAWING WATER FROM LONG DISTANCES.

THE question put by your correspondent as to the capabilities of a suction-pump for fetching water upon a level a distance of 800 feet is, I think, worthy a few practical remarks, which I would respectfully place at the disposal of THE BUILDER.

Water and all fluids, like every other gravitating medium, when put in motion, are subject to the operation of two influences—inertia and momentum; and these forces operate upon all qualities of matter in the ratio of their relative specific gravities. Iron bears to water a proportion of about 7 to 1; therefore, it will take the same intensity of a force to overcome the inertia of a column of water 800 feet as it would a bar of iron about 115 feet long, whether such motion be horizontal or vertical. So also with regard to the momentum of the mass when in motion. Now, to start this bulk of water and stop it again *instanter* at every stroke of the pump is a perfect impossibility: it must have time, and this periodic duration becomes greater as the column of water gets longer, irrespective of its diameter. If a pump be worked at a *maximum* speed, and the water have to be fetched a great distance, this period of time becomes very perceptible; and hence the difficulty which arises even in fetching it at all, without resorting to other means. Take an instance. We want to fetch water 800 feet, say. Put down an ordinary suction-pump used for general purposes: it will not fetch the water at all. Increase the size of the pipes, the result will be little better. Double the size of the pump, or make it double-acting, or put two pumps working opposite: drive any of these at half the original velocity, and we shall gain something towards fifty per cent.; and, after all, the pump will work very imperfectly. And why? because the water has not time to start and stop its motion throughout the whole length of the pipes the instant the pump-bucket changes the direction of its motion. Hence a shock at each extremity of the stroke, one caused by inertia before the water begins to move, and the other produced by the momentum of the mass of water when it is in motion. The result is, the water is always too late: it will not start with the plunger, and thus the pump works imperfectly with much noise and labour, and under serious disadvantage. To take a real case. A 5-horse engine, working two single-acting pumps in opposite connection is required to fetch water at an "effective speed" a distance of about 60 feet. As long as the pumps work slowly, all is right; but the moment they get above a certain tardy velocity, the delivery of water becomes imperfect, and a series of percussive shocks in the suction-pipes and machinery at once commences. The vacuum in the pipes necessary to balance the depth of water in the well becomes doubled at the commencement of every stroke: the plunger ascends, but the water has not time to fill up the space left: hence at every return-stroke there is a severe shock, because the pump's motion is opposite to that of the water. Thus an accumulation takes place, and the *vacuum* that existed an instant ago in the suction-pipes, is now a *pressure* of 10 to 12 lbs. per inch.

The result of all this is, the pump works very imperfectly, and, if driven at anything like a proper speed, will not work at all: the clacks and joints are soon injured, and the whole apparatus is forthwith voted a waster.

Let us next see how this is to be remedied.

We must either by the general resort make one pump four to six times larger than it ought conveniently to be, and work it proportionably slower, or introduce an equally expensive application, and have three lesser pumps in neutral connection, driven by complicated machinery. By this latter arrangement we produce a continual stream in the suction and delivery pipes, and thus annihilate completely these two most provoking evils. My improved pump, alluded to by your correspondent, is designed to accomplish the same object in a much cheaper manner. Here we have the simple application of *one* single-acting pump instead of *three*, but producing "*a constant and undeviating stream*" throughout the entire length of the pipes,—hence its capability to fetch or force water any required distance, without shock or concussion.

The pump is thus enabled to work at a much higher velocity, without inconvenience, as the water is already in motion, and better able "instantly" to follow the ram,—and more effective, inasmuch as the pump gets completely filled at every stroke, and the plunger displaces its entire bulk of water without noise or shock, or any perceptible injury to the working parts.—W. E. CARRETT.

PUBLIC DRESSING ROOMS.

THERE is a new trade, for which the metropolis seems fully ripe; and one not unworthy the attention even of the capitalist: the necessity has for some time been growing; and the eventful circumstances of 1851 not merely suffice to afford a favourable opportunity for bringing it into operation, but they positively render it most urgently necessary.

When surface sewers were superseded by subterraneous ones, and raised and flagged *trottoirs* obviated the demarcation of the footway by means of posts, the calling of the street shoe-black in London died out; for its population was not then so dense, nor its traffic so great, as now,—conditions which would then have saved the occupation of the shoe-black, in spite of those other influences conspiring against him. In Paris he cannot yet be dispensed with, but manages to live on, even in competition with those shops in which the pedestrian can, for a trifle more, get his boots and trouser-feet made smart, in better style and with more comfort.

The shops referred to are fitted up with wall seats, at such height from the floor as that the operators can perform their avocation with ease,—an iron rail being provided for the feet, and serving also as a step for mounting the seat by: along these wall seats, and with their feet resting on these iron rails, the customers may be seen sitting in opposite rows; while men, similar in grade to the inferior attendants in our boot-warehouses, are busy polishing them off. To the Frenchman, who dines at the *table d'hôte* or the *restaurant*, and, when the duties of the day are over, solaces himself awhile at the *estaminet*, and then hies to the *Variétés*, or the *Comique*, without once entering his lodging since the morning, such places must be indispensable; and when it is considered how much the habits of a large portion of the male population of London are assimilated to those of Frenchmen, so far as regards living out, it will be obvious enough that similar accommodation in our metropolis could not fail to be appreciated.

In consequence, however, of Paris affording separately another description of accommodation, rendered necessary by the same habit of out-door life, and for which an outcry has been raised in London, which is becoming daily more and more urgent, the places proposed to be established should be of a more complete description than the mere shoe-blacking shop of Paris; and it is suggested that they should in every respect possess the requisites of "Public Dressing-rooms," or, as our French neighbours might term them, "Cabinets du Toilet,"—the hairdresser playing his part in the scene, equally ready to shave his customer, or to lend the instrument of his office to those having scruples at being taken by the nose.

That the system of living out will prevail in full force among the vast multitude who come to the Great Industrial Fair there cannot be a doubt; and the existence of such places of resort, apart from those of refreshment, would therefore prove a boon of high importance. The expense of fitting up and operation, considered with reference to the probable extent to which they would be encouraged, would, in all likelihood, render a very small charge per visit remunerative: as to their arrangement, it is a matter of detail unnecessary to be here entered into; but any shop having a saloon in the rear, with water-supply and drainage, would be capable of conversion to the purpose.

JAMES WYLSON.

METROPOLITAN COMMISSION OF SEWERS.

A SPECIAL general Court of Commissioners was held on Friday 28th ult. for the purpose of receiving the estimate of Mr. F. Forster, as to cost of drainage of northern portion of metropolis. The Lord Mayor took the chair. Mr. Forster, in submitting his detailed plan to the Commissioners, adopted their instructions, and divided the northern district into two separate areas, for which different means are required to be adopted. He presented his estimate for these works, which was read by Mr. Woolrych, the secretary, and may be abridged as follows:—

ESTIMATE.

	Length. Miles.	Yards.	Cost. £
Main high level sewer from pumping-station, east of Lea, to western terminus at Grand Junction-road, Uxbridge-road...	7	1,202 ...	172,365
Branches: Hackney-brook branch, from junction at Cambridge-heath-road to Kentish-town ...	6	1,433 ...	85,422
Coppice-row branch, to Baker-st.		1,152 ...	8,459
Piccadilly branch, from Gray's-inn-road to St. James's-street, Piccadilly	1	1,606 ...	18,958
Branch from Gray's-inn-road to river Fleet at Old St. Pancras-road	1	290 ...	11,694
Branch from Rathbone-place to Park-crescent, New-road		1,617 ...	8,881
Main low level sewer, from pumping-station, east of river Lea, to Park-walk, Chelsea (exclusive of Victoria-sewer, already finished)	7	1,040 ...	221,667
Branches to main lower sewer, viz. branches to Isle of Dogs	4	260 ...	44,745
Branches from Bridge-street, Westminster, and along Millbank	1	1,317 ...	20,696
A branch from Grosvenor-canal into Fulham and Hammersmith district (its produce taken by Metropolitan Sewage Manure Company)	1	1,200 ...	19,536
The extension of high and low level lines by two parallel sewers from pumping-station to outlet at Barking Creek, including aqueducts (two miles) over North Woolwich Railway, reservoir at Barking Creek, and outlets with penstocks, gates, and machinery, and also dwelling-houses for foreman and labourers	4	1,200 ...	256,939
The pumping-engines at station east of Lea—viz. three 600-horse power engines, with houses, sheds, pumps, and machinery ...			96,800
Total miles ...	37	1,757 ...	£966,162

Total length of sewers, 39 miles: about 15 miles through principal lines of thoroughfare, executed by tunnelling, and remainder mostly by open cutting. Expenses of land, houses, &c. not included in this estimate.

Sir H. De la Beche stated that application had already been made for the sewage for agricultural purposes. The expenses of the works would be distributed over a period of thirty years, at a rate of 3d. in the pound. The commission would require increased powers of borrowing the money required. Alderman Lawrence regretted the deficiency of the estimate as regarded compensation, &c. Lord Ebrington considered the estimate an engineering document. The estimate was approved. The gross amount required, exclusive of compensation, will be 1,080,000*l*.

BATHS AND WASHHOUSES IN SOUTHWARK.—The Vestry of St. George the Martyr have appointed a committee to inquire as to the adoption of the Act 9 & 10 Vict. c. 74, in that parish.

THE QUALIFICATIONS FOR THE INSTITUTE OF ARCHITECTS.

WILL you permit an old subscriber to your most admirable journal to call your attention, and that of the profession, to the present system of admitting to the degrees of Associate and Fellow of the Royal Institute of British Architects? Either the diploma it confers is, or is not, an honourable distinction: if it is, it should not be given to those who are utterly unworthy of it; and if it is not, then, in the name of common sense, of what use is it at all? Why the distinctions of student, associate, and fellow; why the farce of ballot; and why the "incorporation of 7 William 4?"

This reflection has been forced on me from the inspection of some designs submitted in competition not long since for a small public building: one of these was from a member of the Institute (for the names were attached to the plans), the others were not; and that from the "M.R.I.B.A." was not only the worst of all, but so despicably bad altogether, that I have no hesitation in saying it was never surpassed in badness in the palmy days of Compo and Bernasconi. That you may not think I exaggerate, I need only say that it included a Gothic hall about 30 feet by 60 feet, lighted by squat lancets 4 feet wide, with brick splayed jambs, and 14 inch walls, and you will be quite able to appreciate the *genus* of the production, and realize the deformity of everything else about it. I leave you, Sir, to comment on it: here is the fact; but I cannot help thinking that the Institute will gain but little respect in the estimation of true lovers of art, if they permit M.R.I.B.A. to be appended to such miserable abortions as these. Why cannot the diploma of the Institute be as honourable to an architect as that of the Royal Academy itself? Whose fault is it that it is not?

Its propriety was very much shocked that any one of its members should condescend to measure brickwork for a builder, and yet it gives its honours to those whose efforts the merest tyro who had a soul for art would shame.

I do not mean to say that no one should be admitted who had not carried out great works: far from it; but I do think that a body professing to be at the head of a fine art, should at least see, before it confers its titles on a man, that he is capable of making a decent design for an ordinary building. W.

THE SUPERSEDEMENT OF STEAM POWER.

NOTICES to quit have been so often unavailingly served upon this useful public servant, that one tires of giving heed to what steam itself seems to take so coolly; but really the threats to expel it by main force are following, so thick and fast, one on another, and there are so many startling realities amongst those "lying wonders" one is ever now in the midst of, that at length we should not wonder at all to find the field of steam, and such every-day material forces, occupied, all of a sudden, by others much more akin to those of ancient magic than of modern matter-of-fact. We have all heard of enchanted regions through which the boldest and most vigorous knights were prevented, by invisible forces, from advancing even a single step,—of magical circles which could not be broken either out of or into, and so on; but wonders such as these are already nothing extraordinary to any one who has witnessed Dr. Faraday's astonishing experiments in diamagnetism, in which invisible forces are actually shown to resist all endeavours to cleave the mere impassive air with the human arm, and to make such efforts both laborious and exhaustive, even without metallic intervention such as that of copper discs or swords or saws, the difficulty of cutting *the air* with which, the Doctor also illustrated in such a way as would astonish the most able-bodied sawyer, or most errant knight. In short, the suspension of Mahomet's coffin between earth and heaven, so well illustrated by the rise of the bar of iron into the centre of the electro-magnetic helix, and its suspension there in the air, to the

defiance of the law of gravitation, is a stale type of magical incantation compared with the wonders now within the limits of realised and actual science. But it is at least very questionable whether such a prelude as the present be not wasted on the "mechanical wonder" which we intended it merely to introduce. That mechanical wonder, as it is called, is just one of those thousand and one rumoured novelties in power to supersede steam which have seldom or never as yet turned out to be any thing else but smoke: in fact, one of them did actually consist in the turning of smoke itself to account, if we mistake not. In the present instance, a Mr. M'Crackan, of Warwick, draper, announces, it is said, "a new mechanical propelling engine, of six to eight horse power, to supersede steam power, whether stationary, locomotive, or marine; and also to supersede horse power on common turnpike roads. It requires neither coal, air, nor any chemical compound to give the power; has neither funnel, boiler, condenser, tank, nor tender, and appears very unlike any machine hitherto invented. The expense of the engines will be less than those of steam: the cost of working will not be a twentieth part, and a much greater amount of speed may be obtained by them than by the best steam engines now in use."

BRITISH ARCHÆOLOGICAL ASSOCIATION.

AT a meeting on February 26th, Mr. J. Heywood, M.P., president, in the chair, several interesting exhibitions of antiquities were furnished, including a very fine tilting helmet, discovered near Sevenoaks, in Kent. This, in many respects, resembles the helmet of Edward the Black Prince, at Canterbury, but Mr. Planché considered it somewhat earlier. A communication was read from Mr. F. A. Carrington, containing an account of some unknown monumental figures discovered at Wanborough, Wilts; with suggestions as to identifying monumental figures when there is neither inscription, heraldic device, nor tradition. By means of the costume and reference to records, Mr. C. considered that the effigies are those of Emelina Longespie, and Maurice Fitzmaurice, her husband, who lived in the reign of Edward I.—Mr. H. S. Cuming read a paper on the pestle and mortar, giving not only the ancient history of these universally used implements, but describing the various forms in which they appear at the present day in different parts of the world.

The president informed the meeting that the council had made arrangements for the members to dine together at the Freemasons' Tavern, after the annual meeting on March 12.

Books.

A Supplement to Godson's Practical Treatise on the Law of Patents for Inventions, and of Copyright in Literature, the Drama, Music, Engraving, and Sculpture; and also in Ornamental and Useful Designs, for the purposes of Sale and Exhibition. By PETER BURKE, Esq., of the Inner Temple, Barrister-at-Law. Benning and Co. 1851.

MR. GODSON'S treatise on the law of patents and copyright has been for years a standard book of authority with regard to those important subjects. Unfortunately, just as the patent and copyright law was about to become of more moment than ever, the author died somewhat prematurely. He had, at the time, attained a high position in his profession, and, no doubt, subsequent editions of his work would have derived further benefit from his extended knowledge and experience. Although but a short time has elapsed since the last edition of Mr. Godson's treatise, so much change has occurred in the law of patents, and especially of copyright, that the book, unless modernized, would be actually valueless at this very period when the approaching great exhibition renders patents and copyrights all-important. Mr. Peter Burke has, therefore, made this supplement, which fully restores, and, indeed, enhances the utility of the original production. That portion of his labour which was devoted to copyright, Mr. Burke thus speaks of in his preface:—

"With the latter half of the supplement, containing the law of copyright, it became necessary that more should be done, in consequence of the many changes recently occurring in that branch of our jurisprudence. The editor, has, therefore, entirely reviewed and remodelled the matter touching on copyright, so that this supplement, in effect, embraces the whole law on the subject, new or altered, as it now is, whether in regard to literature, music, the drama, engraving, or sculpture, or to designs, useful and ornamental, for the purposes of sale or exhibition. These extensive changes, it cannot but be observed, have happened in every instance for the better. Rich and abundant fruits have already come of the efforts of those salutary spirits of Parliament, the Broughams, the Talfourds, the Bulwers, and others—distinguished actors themselves on the great stage of knowledge—who have thus reformed the copyright law. Nor will the good they have done stop here. The country has yet to experience the incalculable benefits likely to arise from the fair protection of its industry and intelligence, from the due fostering of its genius, and the liberal encouragement of its letters, its music, and its arts. For the perfection of such a system, little now seems wanted, as far as copyright is concerned; and it is only to be hoped that in a short time the law of patents may have to boast of a reformation equally prosperous and beneficial."

Mr. Burke enters very fully into the law of literary and dramatic copyright. When writing on the former, he is particular in explaining what abridgments may be made without incurring the danger of piracy. In refering to the drama, he raises a curious question as to whether a dramatic author has or has not perpetual and exclusive property in the representation of a play which has not been printed and published. The fine arts, and especially the copyright of useful and ornamental designs, form a prominent feature in this supplement, and necessarily so, since the subject comes home, in 1851, to sculptors, artists, designers, engravers, and indeed to every one. Mr. Burke has adopted a very plain style of writing in this supplement, evading, as much as possible, the technical verbiage of the law, so that any person will be able to easily read and comprehend the book.

On the Dwellings of the Poor, and the Means of Improving them. By MONTAGUE GORE. Second Edition. Ridgway, Piccadilly. 1851.

THE subject of the present little pamphlet cannot be too often urged on the attention of all who have influence, of any kind whatever, that may tend to remedy so immense an evil as the miserable state of dwellings inhabited by the poor, especially in towns, and, above all, in this town of towns, the metropolis,—scenes in which, of the most shocking description, are here faithfully exposed. The author, amongst other suggestions, urges the opportunity, which has already been adverted to in our columns, for erecting new dwellings for the poor, which now exists in the vicinity of Farringdon-street, towards Clerkenwell. The project for building workmen's cottages along the lines of railway centering in the metropolis, has never come to any thing yet. Mr. Gore does not fail to recal attention to this, as one of many schemes that might do good, though certainly not to those most essentially and immediately in want of improved dwellings, who are the very poorest of all, and totally unable to benefit directly by such a scheme. Indirectly, however, the state of even these might thus be much improved.

Rudiments of Chemistry; with Illustrations of the Chemistry of Daily Life. By D. B. REID, M.D., F.R.S.E., &c., &c. Fourth Edition. Ballière, Regent-street. 1851.

THE object of this little work is to facilitate the introduction of a course of chemistry as an elementary branch of education in all schools and academies, and thus to lay a foundation for the young pupil's future progress in science, and in the more important of its practical applications in the economy of daily life and the useful arts, by awakening his mind to the nature of the material world in which he is placed. To this end we have no hesitation in recommending this treatise as one exceedingly well adapted to the purpose. The author ha clearly kept that special purpose in view throughout in his judicious collation of facts, and illustration of affinities and principles.

We have occasion to know, what the author also states, that in schools where trials have hitherto been made of elementary and simple courses of chemistry, the pupils have evinced the utmost interest and curiosity in the prescribed experiments. Such courses, too, have become especially necessary, as the author remarks,—

"For young persons intended for professions where a knowledge of physical science is necessary, as, from the great progress now made in all its branches, without some previous training in elementary schools, it would be as impossible to expect the medical man, the engineer, the architect, the manufacturer, and all who are professionally interested in science, to obtain that amount of information from the usual course of education which is now required, as it would be for any one to maintain a proper rank as a scholar or a mathematician, were he never to enter upon the study of classics or mathematics till he should join a university."

First Report of the Committee of the Macclesfield Public Baths and Washhouses. 1851.

THIS report is prefaced by some observations of the Rev. E. Weigall on the necessity and advantages of such establishments, which well merit an extensive circulation in other towns besides Macclesfield. The baths and washhouses there are already more than self-supporting, as a surplus of 64*l.* odds appears in the current year. The number of bathers during the year was 38,522. Of this number 21,748 were those who bathed for 1d. The number of washers during the same period was 2,707. Of these 2,237 were cottagers and lodgers. Upwards of 500 persons have already learned to swim—a benefit itself of no little importance.

Miscellanea.

PRINTING PRESS PAPER-FOLDERS.—A Mr. E. N. Smith, of Springfield, Mass., is said to have perfected a newspaper and book-folding machine, now in successful operation under the management of an Association at Boston, U.S., called "The American Paper-folding Company." The machine consists of the combination of a number of wooden rollers and metallic cones, so arranged, that by means of tape guides the printed sheets are made to pass in different directions between the rollers, each change of direction giving a fold to the sheet, until at last the sheet is discharged, evenly folded in the form desired, and neatly pressed. The sheets fall from the machine into a proper receptacle, where they form an even pile. One of these machines is in operation on the Boston *Transcript's* steam press, and another is at work in New York. The amount of work that such machines will ultimately have to do in the States alone may be estimated by the alleged fact, that in the various newspaper and book-binding establishments there, no less than 500,000 persons are employed in folding alone.

PRINTING PRESS POWER AT BOSTON, U.S.—Through a 2-inch lead pipe a stream of water is introduced into a meter 24 inches square. The fall of water between the Boston reservoir and this meter is about 100 feet. This 2-inch stream discharges eighty gallons of water each minute, and in passing through the meter gives a three-horse power, more than sufficient for driving the press. It is less hazardous than a steam-engine, requires no attention, and is always in readiness. A daily paper is printed by help of this simple power.

POSTING NAMES OF STREETS.—A gentleman from the Whitefriars Glass Works, says the *Sheffield Independent*, has an improved mode of representing names of streets on public lamp-posts, so that the locality should be known by night as well as by day. The system is patented, and consists simply in impressing, by a peculiar process, the name of each street upon glass while in a state of softness.

THE MORMONS' CITY.—Three years ago the Mormons arrived in Salt Lake Valley, in the "Rocky Mountains," and their progress in laying out a city, buildings, fencing farms, raising crops, &c., is truly wonderful, and is another striking demonstration of the indefatigable enterprise, industry, and perseverance of the Anglo-Saxon race. The *New York Inquirer* says, "The city is laid out in about twenty different wards, and covers an area of three square miles. It already contains about 1,000 houses, nearly one story and a half high, built of adobe, or sun-burnt brick. A fine stream of cold water rushes down from the mountains, which is distributed in ditches through every street in the city, through the gardens, and to the doors of the dwellings, where it is used for culinary and other purposes. The ground whereon the city is built is sloping, which affords a great fall for the water, the current through the ditches running at the rate of about four knots an hour, and keeps up a continual supply of fresh water from the mountains. The valley where the city stands is quite handsome, running east and west. The city is situate about three miles from the Timpanagos Mountains on the east, within five of the Utah outlet on the south-east, and within twenty miles from the range of mountains on the south, within twenty-two miles of the great Salt Lake. Its population is about 5,000, that of the valley 10,000, exclusive of the city. The Mormons are now building a new stone state house, two stories high, and its dimensions are 40 by 90 feet. Most of the city is fenced, every half-square mile being under one enclosure, almost every foot of the ground (except where the house stands) being occupied with grain and vegetables. There are several stores kept here. Mechanics of different trades are busily engaged."

MOTION BY GALVANISM.—It is announced in the *Madras Spectator*, Sept. 13, that a person in that town has discovered a substance which he calls *fibre* (what it is remains a secret), which, under galvanic action, contracts suddenly to one-fourth of its length, "its power being equal to 100 lbs. on every square inch of its sectional surface." The inventor has constructed a model engine, to show the application of the new motive power. A reciprocating beam attached to an ordinary crank, with fly-wheel of about 4 feet in diameter, is fitted at each end with a cylindrical piece of the fibre, insulated by a plate of glass. Near the frame is a small galvanic battery. Operations are begun by giving a shock from this battery to one of the pieces of fibre, which immediately and violently contracts, drawing the beam down on that side, and of course communicating motion to the crank and fly-wheel. So soon as the centre has been turned, another shock given to the opposite piece of *fibre* continues the motion, and the shocks being alternately repeated, the fly-wheel soon gains an enormous speed.

IMPROVEMENTS IN BELL-HANGING.—A variety of improvements in the fitting up of bells, &c. have been introduced by Messrs. Bryden and Sons, Rose-street, Edinburgh, models of which are to be sent to the Great Exhibition. The first is an index dial bell, with eight indicators: one bell only is thus required for any number of apartments. The "manifold bell-pull" is a contrivance by which one pull is made to ring bells in eight or any greater number of rooms: when the pointer is placed opposite any name on the dial-plate, and the knob pulled, the bell is then rung only in the room indicated. Another contrivance is the circular telegraph bell, by means of which any one or all of eight different clerks or workmen may be called.

RAILWAY JOTTINGS.—From the annual report of the Commissioners of Railways recently issued, it appears that 625 miles have been added to the 5,996 miles of railway open at the commencement of last year in the three kingdoms: of these, 477 have been opened in England, 104 in Scotland, and 44 in Ireland. The whole length authorized up to December, 1850, those abandoned inclusive, was 12,182 miles. The number of employées has been diminished from 12·3 per mile in 1848 and 10·27 in 1849 to 9·56 in 1850. Including those engaged on lines not opened for traffic, an aggregate of upwards of 190,000 persons have been thrown out of employment previously had on railways since May, 1847. The total number of persons killed upon railways during the past year has amounted to 216, and of persons injured to 256. Several explosions of the boilers of locomotive engines have been reported to the commissioners as having taken place. The most fruitful cause of accidents on railways is want of punctuality on lines where trains are run according to fixed time-tables. The Commissioners approve of excursion trains. They have adopted the rule, however, of approving them only as regards the third-class fares: they think that first and second class fares, as well as third, might be less than one penny a mile. They do not object to any improvement in the construction or fitting up of the third-class carriages calculated to afford greater convenience or comfort to the passengers; but it appears to them that persons willing to pay a higher rate of fare for first or second-class accommodation, when they have the choice of third at lower fare by same train, cannot properly be considered as the *bonâ fide* "poorer class" to which the Act has reference.——In the Court of Queen's Bench on Saturday, in Banco, judgment was given in *The Queen* v. *The Midland Railway*. The Court were of opinion that the rate must be a local one, restricted to each parish, according to the net receipts derived from the line in that parish, after the usual and proper deductions have been made; and that it would be manifestly unjust to divide the whole receipts of the line amongst the different parishes, by which a parish through which the line is worked at a loss would have the same benefit as a parish in which it was worked at a large profit.

ELECTRO-TELEGRAPHIC PROGRESS.—The project for the formation of a second line of electric telegraph from Liverpool to London we understand is receiving a large measure of support.——From the evidence laid before the Privy Council relative to Wheatstone and Cooke's patent, it appears that the Electric Telegraph Company, so far from being a disastrous, is an exceedingly prosperous enterprise. During the first five years of its career the company received for patent rights from railways, 122,285*l.*; profit repairs, 7,301*l.*; profit on erections, 40,747*l.*; or a total profit of 170,333*l.* Profits on its commercial telegraph were, during three years, 20,179*l.*; and during 1850 the profits on the same line, after payment of 33,447*l.* expenses, were 10,086*l.*, or 10 per cent. on the 104,229*l.* paid-up capital of the company.——A memorial to the directors of the London and North-Western Railway Company, praying the directors not to grant the exclusive use of the London and North-Western Railway to any single telegraph company whatever, but to allow other telegraph companies to have their wires along these lines of railway, has received the signatures of many of the leading merchants and bankers of Liverpool.

OUR SCENE-PAINTERS AND OUR STREETS.—At the dinner given to Mr. Macready on the 1st instant, whereat a crowd of the leading spirits of the age congregated to do parting honour to a great actor and accomplished man, his Excellency Mr. Van de Weyer, in the course of his speech proposing "The Artists and Sir Charles Eastlake," said,—"We all know how linked together are all the arts, and when dramatic poetry unites to painting, sculpture, architecture, and music, it conduces to the most ennobling pleasure that the mind can enjoy. Alluding to the relations of art with the stage, allow me to make one incidental remark. It is impossible for the foreigner who visits your theatres not to be struck with the extraordinary talent, the real genius, displayed by your artists in scenic decoration,—the richness of the imagination, the colouring, and the beauty of the architecture,—the last of which qualifications I have often wished to see transferred from your stage to your streets, where, I must confess, there are some architectural enormities which doubtless weigh as heavily upon your soil as I dare say they do upon the mistaken artists who perpetrated them."—Sir C. Eastlake, in his reply, said, he fully concurred with him in his remarks on the subject of theatrical decorations. He also agreed in his recommendation that the architectural scenery of the stage should be transferred to our streets, and might remind them, too, that that practice was common in Italy in the highest period of her art.

THE SCULPTURE AT WELLS CATHEDRAL.—One of the large statues, weighing nearly a ton, on the west front of Wells Cathedral, fell from its niche last autumn, not long after the judges had left, the day of assize, and was broken into a multitude of pieces: so thoroughly shattered was it, that the authorities there concluded that its restoration was impossible, but called in Mr. E. Richardson to see what could be done. Piece by piece it has been carefully bedded together, and cramped and bolted; and the statue of (it is said) King Edward, son of Alfred, is erect again, and nearly ready for replacing in its niche. It measures 8 feet 6 inches in a sitting position, holding apparently a grant or deed on the right knee, the right hand resting upon it, while the left is holding the fastening of the mantle. The extent to which the interior of this cathedral has been renovated, and the generally sound state of the exterior, excepting the west front, will, it is to be hoped, induce attention to this beautiful and unique example, before further reductions take place by decay and similar accidents to that above described.

THE TRIGONOMETRICAL SURVEY.—The Royal Society of Scotland have fallen into an error with regard to the Irish survey having been "brought to a close" in 1843. The work is not even yet finished, and there is no likelihood of its being so for the next dozen, perhaps twenty years. A large number of men under a captain of the Royal Engineers are still employed on the revision of the northern counties, which were first published in rather a skeleton form. The force employed there now are supplying the omitted detail, and I believe *contouring*, which latter operation has to be conducted over the whole country.—A SUBSCRIBER.

RANSOME'S BRICKMAKING MACHINES IN INDIA.—The *Delhi Gazette* and the *Friend of India* give some account of certain difficulties with the native caste of brick moulders in preparing about 100,000,000 of bricks for the great works at Roorkee; and of the way in which these difficulties were overcome by Col. Cantley, who purchased of Messrs. Ransome and Parsons, of Ipswich, one of "Hale's patent" machines, of which that well-known firm is both the manufacturers and the patent proprietors. The machine in question not only succeeded admirably, turning out upwards of 10,000 perfect bricks every day, or doing the work of 12 brick moulders, but brought the fractious natives to their senses, and made them both more willing and more industrious in the face of their tremendous rival. Other machines, however, were made, from Messrs. Ransome's model, in India, and also set to work. The saving to Government by the use of these machines on this single undertaking alone is estimated at nearly a lakh of rupees; and it is thought that "Any enterprising individual who would construct and work a few of these machines in Bengal, would bring down the price of bricks, to the great benefit of the public, and not less perhaps to himself."

ILLUMINATING GAS-STOVE.—The idea of the atmopyre, first given in our columns, appears to have been followed out at Scarborough, in a design, by Mr. G. Knowles, of a gas apparatus, for the simultaneous supply of light and heat. In form his invention resembles the cylindrical-shaped stoves in ordinary use. The burners are placed between two cylinders, the outer one of glass and the inner one of glass or polished metal, acting as a reflector. The heat produced is sufficient, it is said, for all ordinary purposes, and is tempered and the air purified through a water cylinder, so as to be comparatively innocuous and agreeable when respired. The expense of combustion is stated to be 3d. in twelve hours (gas at 6s. 8d. per 1,000 feet). The design has been registered. The *Scarborough Gazette* gives further particulars of this invention.

SCHEDULES FOR THE CENSUS.—Amongst the searching forms of inquiry by means of which a vast amount of most useful and important information, besides the mere amount of the population, is to be gathered out of every nook and corner of the land on 31st inst. there are schedules, copies of which the Registrar-General has forwarded to us, and from which it appears that separate returns will be called for of the statistical details of all sorts of schools, churches and chapels, and literary and scientific institutions. The schedules have been prepared under the direction of one of her Majesty's principal Secretaries of State, and are of a very comprehensive and special description, with columns or spaces for all such particulars as the name, cost, date, and mode of erection and endowment, free and other sittings and attendance, pew rents, fees, dues, offerings, &c. in churches and chapels of every denomination; the name, class, and dimensions of schools, and number and age of scholars, number and class of boarders and teachers, income, endowment, fees, and expenses, &c.; and from literary and scientific institutions their character and rules, number of volumes in libraries, nature and extent of museums, number and class of lectures, terms of admission, number of members and visitors, &c. &c.

PROJECTED IMPROVEMENTS AT LONDON-BRIDGE.—At a Court of Common Council on Friday in last week, the report of the Navigation and Port of London Committee on the subject of steamboat and other traffic at London-bridge was read. The committee state that they had instructed Mr. S. W. Leach, engineer, to prepare plans of accommodation for the embarking and disembarking of passengers at the east and west sides of the Surrey end of the bridge. They were of opinion that it would be very highly conducive to the public convenience if such accommodation were afforded. Together with a plan agreed to by the committee, and estimated to cost 1,220*l.*, that of Mr. Dawson, proposing an arched thoroughfare through the abutment of the bridge, and under the roadway, from the upper landing on the west stairs to the corresponding landing on the east stairs, was laid before the Court with the committee's opinion that the same would be a great public accommodation; and that, if made, the platform and brow on the east stairs would be unnecessary. Mr. Dawson's plan was defended by Mr. Deputy Stacey, and also by Mr. Dawson himself, who said that the opening at the abutment suggested to the Court would prove an accommodation of the greatest importance, for the attempt to cross from one side of the street at the bottom was dangerous in the extreme. A professional friend of his estimated the expense at 800*l.*, and no doubt the cost would be a mere trifle in comparison with the accommodation, which would, in fact, obviate the necessity of putting the City to the expense of a pier. The report was ordered to be printed.

WEST DRAYTON CHURCH.—On Tuesday, the 4th inst., the Church of St. Martin, West Drayton, was re-opened by the Lord Bishop of London, having undergone a substantial repair and restoration. The whole of the church has been refitted with open seats of oak, those in the chancel having ends with carved poppy heads. A new stone pulpit has been added, and the paving relayed with tiles. The tower still remains a memento of the former decayed state of the church; but it is intended to restore this portion of the building as soon as funds can be raised. Mr. C. Innes was the architect: Mr. Fassnidge, of Uxbridge, the builder. The total outlay about 1,100*l.*

PEEL TESTIMONIALS.—At a meeting of the metropolitan committee on 1st inst. it was unanimously resolved,—1. That the list be closed on 31st inst. 2. That a statue in bronze be erected in Westminster. 3. That a sub-committee be appointed to select an artist, to secure the best site, &c.; and that the Earl of Aberdeen, Viscount Canning, Viscount Hardinge, Lord Ashburton, Right Hon. Sidney Herbert, M.P., Right Hon Sir J. Graham, M.P., and J. Wilson Patten, Esq., M.P., be requested to constitute the sub-committee.

——A correspondent of the *Preston Guardian* suggests that the Blackburn testimonial should be a cylindrical column, to be erected on the summit of Billinge-hill, north of Blackburn, and overlooking the town, where there is plenty of good stone at hand. This column to be surmounted by a colossal statue of Sir Robert in the white limestone of Westmorland, which, he remarks, can be worked as fine as marble, and is much better adapted for outdoor statuary than marble, from its superior resistance to atmospheric action, smoke, and moisture.

ART-LECTURE AT MANCHESTER.—Mr. J. A. Hammersley, the principal master of the Manchester School of Design, delivered an interesting lecture on Friday in last week, "On the Operatives of this Country; their Interest in Works of Art and Objects of Beauty." In concluding, the lecturer lamented the general absence of enthusiasm from the English mind. In this quality he thought we were excessively deficient. He did really wish we had a greater number of people amongst us who would just come under the possible charge of being mad. It did appear to him we were exceedingly even and smooth in this country; and wanted breaking up into knots and corners, and being a little bit more individual and eccentric. Amongst other things, he desired that we should be enthusiastic enough to advocate the present and other similar questions with something like warmth of heart, instead of, as at present, seeming to be afraid of speaking, thinking, and acting.

A METROPOLITAN CHAMBER OF COMMERCE.—It is a very strange circumstance that while not only most continental towns of importance, but the capital towns of Scotland and Ireland, and all our own chief provincial towns throughout the three kingdoms, have practically felt and proved the utility of chambers of commerce, the great centre, not only of all these national satellites, but of the commerce of the whole civilized world, should still be in a state of class immaturity and unorganization; and that, while the international commerce of the world is concentrating itself in the great "Chamber" at Hyde Park, the commerce of London should have remained till this eventful year without a representative head of its own. The commercial organization of our metropolis ought to have preceded that of any town in the kingdom, and, at all events, ought to constitute the leading head of its whole commercial system. It is satisfactory to know, however, as we now do, by a letter from Mr. Lionel Rothschild and Mr. John Masterman, that this singular defect is likely to be forthwith remedied by the establishment of a Metropolitan Chamber of Commerce, which ought, if possible, to be organized and in a working state while the representatives of the commercial wealth and industry of the world are here assembled. Its maturization must, of course, be a work of time, but at least its more obvious and called-for committees might be very speedily appointed. In its ultimate completion, *tribunals* of commerce are contemplated, but the more immediate objects of its promoters are of a less ambitious and more readily attainable order.

CHANCELS AND EARLY CHURCHES.—SIR,—Will you kindly inform "N. J. Elliott," that I have neither time nor inclination for personal discussions, but my work on the subject of screens will be published this month, and if Mr. Elliott thinks it worth while to go to Dolman's, the publisher, and get a copy, he will find an ample refutation of his assertions.—A. W. PUGIN.

WIDE ESTIMATING AND SINGULAR COMPETITORS.—I beg to forward you the following list of tenders delivered on Monday, March 3, to the Commissioners of Paving at Portsmouth, for constructing a Camshot on Point Beach:—

Bellingham, contractor	£135	0	0
King, builder	130	0	0
Hendy, ditto	98	0	0
Absalom, ditto	90	10	0
Childs, sailmaker	83	0	0
Latter, carpenter	65	12	0
Crampton, coal merchant	56	10	0

Who will next compete?—C.

DESIGNS REGISTERED.—W. A. Biddell, St. John's-square—alarm door and window wedge; J. Hadley, Worcester—sole to cover tires of carriage wheels; J. Morrison, Sheffield—tap for high-service pressure. The following are provisional registrations:—W. Leuchars, Piccadilly, double-action lock; T. W. Tipler, Rugby, portable fire-escape; W. M. Bywater, Piccadilly, water meter.

BARNSLEY WORKHOUSE COMPETITION.—The successful competitors for the new union workhouse about to be erected at Barnsley, are Messrs. Lockwood and Mawson.

GAS FITTERS.—Tenders opened by the board of guardians for gas fittings for Birmingham New Workhouse. Messrs. Drury and Bateman, architects.

Chambers, Birmingham	779	0	0
Glenn, Jno. London, contractor for the building	639	0	0
Birmingham Gas Company	497	17	9
Birmingham and Staffordshire Gas Company	491	12	7

TENDERS.

Tenders for fitting up thirteen Arches of the Eastern Counties Railway, erection of Granary, Cab Lodge, Smith and Wheelers' Shops, Dwelling-rooms, Offices, &c. at Mile-end, in the County of Middlesex, for the Eastern Counties Cab Company, received 26th February, 1851. Messrs. Church and Son, Woolwich, architects. The quantities supplied by the architects.

Denton	£6,749	0	0
Laynes	6,146	0	0
Edmund Smith	6,037	0	0
Kirk and Parry	5,999	0	0
Ward	5,963	0	0
Taylor and Son	5,947	0	0
Williams	5,902	0	0
Pollock and M'Lennan	5,580	0	0
Hill and Son	5,530	0	0
William Hill	5,442	0	0
Tamsett	5,305	0	0
Smith	5,300	0	0
Knight and Son	5,260	0	0
Paulling	5,154	0	0
Curtis	4,944	0	0

Tenders for erecting a Villa, with all Stabling and other Offices, &c., at Sutton. Mr. Cross, architect.

Thos. Burton	1,458	0	0
G. Brown	1,145	0	0
James Starkey	1,125	0	0
P. Donelly	1,073	0	0

TO CORRESPONDENTS.

"*Cracks in Wood.*"—S. Y. says, "I have a large figure carved in wood (Lime or Sycamore), the surface of which has rended somewhat seriously. I am fearful lest the mischief should extend. If any of your correspondents can inform me of a treatment that will prevent this, without discolouring the wood; and, at the same time, whether there be any material that can be introduced into the shakes and effectually conceal the injury already sustained; an important service will thereby be rendered to an old and very constant reader."

"*Modelling Wax.*"—"W. P." asks for a receipt for good modelling wax.

"Johnny," "E. B.," "R. B. T.," "E. W. L. C." (shall appear); "G. W.," "W. E. C.," "J. W.," "E. L. T." (declined with thanks); "E. A." (ditto); "J. B." (we do not know when Limehouse church will be opened); "H. M.," "T. T.," "B. C.," "Architecton," "An Enemy to Puffing," "J. T.," "S. R." (write to the Registrar, Somerset House), "E. J. C.," "W. B. T.," "J. T.," "W. L.," "J. J. G.," "G.," "W. X.," "Watchman," "T. H. W.," "W. H.," "G. Z. G." (bells and grates are removable fixtures, under ordinary holdings), "C. B. A." (shall hear from us), "G. G.," "A. K."

"*Books and Addresses.*"—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

ADVERTISEMENTS.

BILLS of QUANTITIES.—DAY & SON, Lithographers to the Queen.—Lithograph Bills of Quantities with the greatest despatch, and at a vast saving on the prices generally charged.
17, GATE-STREET, LINCOLN'S-INN-FIELDS.

BILLS OF QUANTITIES.—Bills of Quantities, &c., LITHOGRAPHED with celerity, attention, and economy. Maps, Plans, &c., reduced or enlarged, and every description of Architectural and Engineering Drawings executed in the most superior manner, in plain or tinted Lithography.
ASHBEE and TUCKETT, Lithographers and Draughtsmen,
18, BROAD-COURT, LONG-ACRE, LONDON.

BROOKS (from Dollond's), OPTICIAN and MATHEMATICAL INSTRUMENT MAKER, respectfully solicits from the public a continuance of their patronage. Having had upwards of twenty years' experience in Dollond's, they may rely that all articles submitted by him are of the most perfect character, and at moderate prices. SPECTACLES, Telescopes, Microscopes, Opera and Race Glasses, Sextants, Quadrants, Compasses, Barometers, Surveying Instruments, Rules, Scales, &c., of every description.
41, Ludgate-street, St. Paul's.

LIGHTNING CONDUCTORS. R. S. NEWALL and CO.'S PATENT COPPER ROPE, of ANY LENGTH in ONE PIECE.
3-8ths inch diameter, 7½d. per 100 feet.
Office and Warehouse, 130, Strand, London.

STEAM-ENGINES for AGRICULTURAL and other PURPOSES.—MESSRS. CLAYTON and SHUTTLEWORTH'S well-known Portable Steam-Engines can be seen at DEANE, DRAY, and DEANE'S Agricultural Implement Warehouses, Swan-lane, London-bridge.—The above engine obtained the prize at the Exeter Meeting of the Royal Agricultural Society, July, 1850.

MANUFACTURERS or INVENTORS of IMPROVED FITTINGS, or other articles specially adapted to the DWELLINGS of the LABOURING CLASSES, who may be desirous of EXHIBITING the same in a Model House for the accommodation of four families, now erecting by H.R.H. Prince Albert, in the Vicinity of the Exhibition Building, Hyde-park, are invited to communicate their wishes, and a drawing or description of the article they propose to exhibit, with price, &c., to the Committee of the Society for Improving the Condition of the Labouring Classes, 21, Exeter Hall, on or before Saturday, March 15. The building being of limited extent, the Committee will find it necessary to admit only such articles as appear to them peculiarly suited to the purpose, especial reference being had to economy in first cost, as well as durability of construction.

THE GAS FITTERS' ASSOCIATION, with a view to illustrate the economy, convenience, and cleanliness of GAS, have arranged that a portion of the Royal Polytechnic Institution should, during the period the National Exhibition remains open, be set apart for EXHIBITION and ILLUSTRATION of Apparatus, embracing any novel application of Gas for Culinary, Heating, Chemical, or Manufacturing purposes, Improvements in Burners, modes of Lighting, Ventilation, Governors, and Meters, each to be shown in practical operation (such not being permitted at the Great Exhibition). Premiums of medals in gold and silver will be awarded to those of the greatest public utility. A sketch and description of articles prepared for exhibition should be sent to the committee. Apparatus will be received at the Institution from April 3rd to 21st inclusive, and it is hoped those interested in extending the application of gas will contribute towards the expenses to efficiently carry forward the movement for increasing the use of gas to domestic and other purposes for which it is applicable. Subscriptions may be paid to the account of the Association at the London and Westminster Bank, St. James's-square, or the Chairman, Mr. GEORGE DETHRIDGE, 32, Gerrard-street, Soho, London, of whom any further information may be obtained.

THE GREAT EXHIBITION of the INDUSTRY of ALL NATIONS.—CENTRAL REGISTRATION OFFICE, 8, Exeter-change, Catherine-street, Strand, London.—This office has been established under the patronage of noblemen, Members of Parliament, ministers of religion, and gentlemen, with the view of presenting facilities to those who can furnish accommodation to visitors, and to those who may wish to avail themselves of the same. The aim of the promoter has been to establish a simple machinery, by which, at a moderate cost, the amount of accommodation at hotels and boarding-houses may be made extensively known, as well as the periods during which furnished houses, suites of apartments, and lodgings may be obtainable, together with the terms. These objects will be carried out as follows:—

1. By the publication, early in April, for circulation throughout the United Kingdom, of a classified register of houses, suites of apartments, and single lodgings. This will be sent to any part of the kingdom on the receipt of six postage-stamps, or will be obtainable from any respectable news agent. The charge for insertion of any lodging, &c. in this will be 2s. 6d.—of which 1s. 6d. will have to be paid for advertisement duty. As the result of this publication, the probability is, that every house will receive a constant succession of inmates, instead of being sometimes crowded and sometimes empty.

2. By a Classified Registration in the Books of the Office.—The object of this is to afford information to all inquirers, or intending visitors, as to what lodgings, &c. are obtainable on any given day. This registration will be for the whole period of the Exhibition, and the charge will be 5s.

3. By an Authorised Inspection.—This is important, that the Manager and Secretaries may be able to give information to inquirers as to the situation, style of accommodation, &c., of any particular house or lodging. Any person may obtain the inspection on the payment of 2s. 6d.

Promoter—JOHN CASSELL, Esq., 335, Strand, and 80, Fenchurch-street, London.
General Manager—Mr. M. T. Raymond.
Corresponding Secretary—Mr. J. W. Green.
Acting Secretary—Mr. F. Bell.

INVENTORS' AID ASSOCIATION.—(Provisionally Registered.) The Capital of the Association to be raised by Shares of 5l each.

BANKERS—Messrs. Spooner, Attwood, and Co. Gracechurch-street.
SOLICITOR—George Fitch. Esq. 23, Southampton-street, Bloomsbury.

The INVENTORS' AID ASSOCIATION has been formed for the purpose of affording to Inventors the means of obtaining Letters Patent for their inventions, and providing opportunities for a beneficial disposal of Patent Rights obtained by the aid of this Association.

Applications for the remaining shares to be made, accompanied with a reference, to the Secretary, at the offices of the Association, of whom also prospectuses, and every information, can be obtained.

The Secretary will be happy to wait upon any gentleman who may favour him with an interview, to explain the objects and intentions of the Association.

The Committee are prepared to appoint Agents in the provincial towns, on application (with references) being made to the Secretary of the Association.

Office Hours from 10 to 4 o'clock.

WILLIAM M. ROBERTSON, Secretary.

5, Beaufort-buildings, Strand, London.

WESTERN LIFE ASSURANCE and ANNUITY SOCIETY, 3, Parliament-street, London.

DIRECTORS.

Henry E. Bicknell, Esq., 28, Upper Bedford-place.
William Cabell, Esq., Newington-place, Surrey.
Thos. Somers Cocks, jun., Esq., M.P., Charing-cross.
George Henry Drew, Esq., Parliament-street, Westminster.
William Evans, Esq., Chesham-street, Belgrave-square.
William Freeman, Esq., Millbank-street.
Francis Fuller, Esq., 29, Abingdon-street.
Joseph Henry Goodhart, Esq., Upper Tooting.
Thomas Grissell, Esq., Palace-yard, Westminster.
James Hunt, Esq., 31, Parliament-street.
John Arscott Lethbridge, Esq., Greenwich Hospital.
Edmund Lucas, Esq., Millbank-street.
James Lys Seager, Esq., Millbank.
John R. White, Esq., Millbank-street, and Swanscombe.
Joseph Carter Wood, Esq., Artillery-place, Westminster.

Bonus declared at the First Division of Profits, 31st December, 1848.—A valuation of the Society's assets and liabilities was made at the close of its first financial period, on the 31st December, 1849, and, after setting aside an ample reserve fund, a bonus was allotted to the assured out of their share in three-fourths of the net profits. The result is highly satisfactory, and, when the moderate rates of premium charged by this Society are compared with the very high payments usually required for the same amount of policy, the bonus here allotted will be found to be very advantageous.

The following specimens will serve as illustrations of this point:—

	Original Amount Assured.	Annual Premiums.	Bonus.	Amount now Assured.
	£	£ s. d.	£ s. d.	£ s. d.
A. B., 1843, age 23	2,000	30 15 0	137 2 8	2,137 3 8
C. D., 1843, age 34	1,000	26 15 0	75 15 6	1,075 15 6
E. F., 1843, age 26	2,000	64 14 6	185 2 0	2,185 2 0

A second division of profits will take place at the close of the year 1853, and the attention of the public is invited to the tables and peculiar advantages offered to assurers by the Society. (See pages 4, 5, 6, 7 prospectus.)

Specimen of Rates of Premium for Assuring 100l. with a share in three-fourths of the profits:—

Age	£ s. d.	Age	£ s. d.
17	1 14 4	32	2 10 8
22	1 18 8	37	2 18 6
27	2 4 5	42	3 8 3

Valuable privilege.—Policies effected in this office do not become void through temporary difficulty in paying a premium, as permission is given, upon application, to suspend the payment at interest, according to the conditions detailed in the prospectus.

The necessary forms, with every information as to the mode of effecting assurances, may be obtained, either by letter or personal application to the Actuary, 3, Parliament-street, Westminster, or from any of the Society's agents in the country.

ARTHUR SCRATCHLEY, M.A., F.R.S., Actuary and Secretary.

HEALTHY AND UNHEALTHY LIVES ASSURED.

THE CATHOLIC LAW and GENERAL LIFE ASSURANCE COMPANY, 8, New Coventry-street, Leicester-square, London; and 18, Rue Tronchet, Paris; incorporated under the 7th and 8th Vict. cap. 110.

This Company assures Diseased as well as Healthy Lives.

Lives declined by other offices accepted at equitable rates.

The Board meets every Thursday at 2 o'clock. Prospectuses, proposals, and any information furnished on application to the Actuary or Secretary.

WILLIAM HENRY ARCHER, Actuary.
WILLIAM NORRIS, Secretary.

LONDON ASSURANCE CORPORATION.—Established by Royal Charter, in the reign of George I., 1720.

For LIFE, FIRE, and MARINE ASSURANCES.

Head Office, No. 7, Royal Exchange.
Branch Office, No. 10, Regent-street.

ACTUARY.—PETER HARDY, Esq., F.R.S.

THIS CORPORATION has effected ASSURANCES on LIVES for a period of ONE HUNDRED AND THIRTY YEARS.

FIRE INSURANCES effected at moderate rates upon every description of property.

MARINE INSURANCES at the current premiums of the day.

JOHN LAURENCE, Secretary.

VICTORIA LIFE ASSURANCE COMPANY, 18, KING WILLIAM-STREET, CITY.—Established 1838.

DIRECTORS.

BENJAMIN HAWES, Esq. Chairman.
THOMAS NESBITT, Esq. Deputy-Chairman.

Charles Baldwin, Esq.	W. K. Jameson, Esq.
John Bernard, Esq.	John Knill, Esq.
George Denny, Esq.	John Nolloth, Esq.
Bryan Donkin, Esq., F.R.S.	Charles Phillips, Esq.
Aaron Goldsmid, Esq.	Daniel Sutton, Esq.
Sidney Gurney, Esq.	O'B. Bellingham Woolsey, Esq.

Assurers in this Company have the guarantee of an ample subscribed capital, and careful and economical management. The success of the Society is manifest from the fact that since its establishment more than 2,900 Policies have been issued, assuring over 1,300,000l., while its assets stand at 125,000l. and upwards, with an income of 30,000l. a-year, steadily increasing.

CREDIT OF ONE-THIRD OF THE PREMIUMS TILL DEATH.—When an assurance is taken out for the whole term of life, one-third of the annual premiums may remain unpaid till death.

CREDIT OF HALF THE PREMIUMS FOR FIVE YEARS.—When an assurance is effected for the whole term of life, one-half of the annual premiums may remain on credit for five years at 5 per cent. per annum interest, to be paid off at the expiration of the five years, or to remain as a charge upon the policy, as may be agreed upon.

PROFITS—BONUS.—Four-fifths, or 80 per cent., of the entire profits of the Company are appropriated every seven years to parties who have been assured on the profit scale for three clear years; the bonus may be applied either in addition to the sum assured or in reduction of the future premiums.

LOANS.—Advances are made to assurers on assignable property or income, and also on the guarantee of most undoubted personal sureties.

WILLIAM RATRAY, Actuary and Secretary.

THE YORKSHIRE FIRE and LIFE INSURANCE COMPANY. Established at York, 1824, and empowered by Act of Parliament. Capital 500,000l.

TRUSTEES.

Lord Wenlock, Escrick Park.
G. L. Thompson, Esq., Sheriff-Hutton Park,
Robt. Swann, Esq., York.
BANKERS.—Messrs. Swann, Clough, and Co., York.
ACTUARY and SECRETARY.—Mr. W. L. Newman, York.

The attention of the public is particularly called to the terms of this Company for life insurances, and to the distinction which is made between male and female lives.

Extract from the Table of Premiums for Insuring 100l.

Age next birthday.	A MALE.	A FEMALE.	Age next birthday.	A MALE.	A FEMALE.
	Whole Life Premiums			Whole Life Premiums.	
10	1 7 6	1 5 4	46	3 11 6	3 3 2
13	1 9 3	1 7 0	50	4 1 9	3 13 3
16	1 11 3	1 8 10	53	4 11 6	4 2 6
20	1 14 4	1 11 6	56	5 4 0	4 14 0
23	1 17 0	1 13 8	60	6 6 0	5 12 6
26	2 0 3	1 16 2	63	7 4 0	6 9 6
*30	2 5 0	1 19 9	66	8 4 0	7 10 8
33	2 8 6	2 2 10	70	10 0 4	9 7 6
36	2 13 0	2 6 4	73	11 16 2	11 2 6
40	2 19 9	2 12 0	76		13 1 9
43	3 5 3	2 17 2	80		15 12 10

* EXAMPLE.—A Gentleman whose age does not exceed 30, may insure 1,000l. payable on his decease, for an annual payment of 25l. 10s.; and a Lady of the same age can secure the same sum for an annual payment of 18l. 17s. 6d.

Prospectuses, with the rates of premium for the intermediate ages, and every information may be had at the Head Office in York, or of any of the Agents.

FIRE INSURANCES are also effected by this Company on the most moderate terms. AGENTS are WANTED in those Towns where no appointments have been made. Applications to be made to Mr. W. L. NEWMAN, Actuary and Secretary, York; or to Mr. HENRY DINSDALE 12, Wellington-street Strand Agent for London.

PELICAN LIFE INSURANCE COMPANY, Established in 1797, for Granting Assurances on Lives and Survivorships.—Offices, 70, Lombard-street, City, and 57, Charing-cross, Westminster.

DIRECTORS.

Matthias Attwood, Esq.	Kirkman D. Hodgson, Esq.
Robert Gurney Barclay, Esq.	Thomas Hodgson, Esq.
William Cotton, Esq., F.R.S.	Henry Lancelot Holland, Esq.
William Davis, Esq.	J. Petty Muspratt, Esq.
Richard Fuller, Esq.	C. Hampden Turner, Esq., F.R.S.
Jas. A. Gordon, M.D., F.R.S.	Matthew Whiting, Esq.

AUDITORS.

Emanuel Goodhart, Esq. John Davis, Esq.
John Haggard, D.C.L.

BONUS.

NOTICE.—FOUR-FIFTHS of the Net Profits realised by the Company from Insurances effected upon the Participating Scale of Premiums allotted, agreeably to the conditions of the Policies, every Seven Years, commencing from the 3rd July, 1840.

The following is a specimen of the Bonuses declared at the first septennial investigation up to the 2nd July, 1847:—

Age when Assured.	Sum Assured.	Premiums Paid. Number.	Premiums Paid. Amount.	Bonus added.	Per centage on Premiums paid.
	£.		£. s. d.	£. s. d.	£. s. d.
15	3,000	6	315 0 0	164 16 8	52 6 6
25	5,000	7	775 16 8	347 13 4	44 16 3
35	2,500	6	431 17 6	183 18 0	42 11 8
45	2,000	6	464 0 0	172 6 7	37 2 10

Annual Premium required for the Assurance of £100 for the whole term of life:—

Age.	Without Profits.	With Profits.	Age.	Without Profits.	With Profits.
	£. s. d.	£. s. d.		£. s. d.	£. s. d.
15	1 11 0	1 15 0	40	2 18 10	3 6 5
20	1 13 10	1 19 2	50	4 0 9	4 10 7
30	2 4 0	2 10 4	60	6 1 0	6 7 4

ROBERT TUCKER, Secretary.

THE LONDON INDISPUTABLE LIFE POLICY COMPANY, No. 72, Lombard-street, and 24, Connaught-terrace.

TRUSTEES.

Richard Spooner, Esq., M.P.

J. Campbell Renton, Esq., M.P.	James Fuller Madox, Esq.
Richard Malins, Esq., Q.C.	William Wilberforce, Esq.

The POLICIES are INDISPUTABLE, in terms of the Deed of Settlement of the Company, duly registered, and are not dependent for their validity on the construction to be put upon the official papers which preceded them, or upon reports, prospectuses, or other varying documents. They are thus rendered CERTAIN FAMILY PROVISIONS, AND NEGOCIABLE DOCUMENTS OF SECURITY.

Owing to this important improvement in the practice of life assurance, the progress of this Company has been rapid from the commencement of its business, and is steadily advancing.

ALEXANDER ROBERTSON, Manager.

FAMILY ENDOWMENT LIFE ASSURANCE AND ANNUITY SOCIETY, 12, Chatham-place, Blackfriars, London, and at Calcutta. CAPITAL, 500,000l.

DIRECTORS.

William Butterworth Bayley, Esq., Chairman.
John Fuller, Esq., Deputy-Chairman.

Lewis Burroughs, Esq.	Edward Lee, Esq.
Robert Bruce Chichester, Esq.	Colonel Ouseley.
Major Henderson.	Major Turner.
C. H. Latouche, Esq.	Joshua Walker, Esq.

Thirty per cent. Bonus was added to the Society's Policies on the profit scale in 1845. The next valuation will be in January, 1852.

Loans are granted on mortgage and on security of Life Interests and Reversions. INDIA BRANCH.

The Society has extensive Indian business, and grants Policies of Insurance, Deferred Annuities, and Endowments, in Calcutta, Madras, and Bombay, to members of the Civil and Military Services, and others. Parties calling at the Office will be furnished with full particulars, to which the attention of Parents and Guardians of Youths proceeding to India is especially invited.

JOHN CAZENOVE, Secretary.

UNDER THE ESPECIAL PATRONAGE OF HER MOST GRACIOUS MAJESTY THE QUEEN, AND FIELD MARSHAL HIS ROYAL HIGHNESS PRINCE ALBERT, K.G., &c.

THE ROYAL NAVAL, MILITARY, AND EAST-INDIA LIFE ASSURANCE SOCIETY, Established A.D. 1837, FOR GENERAL ASSURANCE ON LIVES, 13, Waterloo-place, London.

DIRECTORS.

Colonel Sir Frederic Smith, K.H., F.R.S., R.E., Chairman.	
James Frederick Nugent Daniell, Esq., Deputy-Chairman.	
Admiral the Right Hon. Sir G. Cockburn, G.C.B.	Major-Gen. Arnold, K.H., K.C.
Major-Gen. Sir J. Cockburn, Bt. G.C.H.	Archibald Hair, Esq., M.D.
General Sir Thomas Bradford, G.C.B., G.C.H.	Captain William Lancey, R.E.
Lt.-Gen. Sir J. Gardiner, K.C.B.	Wm. Chard, Esq., Navy Agent.
Major-General Sir Hew D. Ross, K.C.B., R.A.	Wilbraham Taylor, Esq.
Capt. Sir Geo. Back, R.N., F.R.S.	Major-Gen. Sir John Rolt, K.C.B.
Major-Gen. Taylor, C.B., E.I.C.S.	Major F.S. Sothebr, C.B., E.I.C.S.
Major-Gen. Edw. Wynyard, C.B.	Major-Gen. Sir G. Pollock, G.C.B.
	Captain William Cuppage, R.N.
	Captain Michael Quin, R.N.
	Major-Gen. Sir Dudley St. Leger Hill, K.C.B.

BANKERS—Messrs. Coutts and Co., 59, Strand.
PHYSICIAN—Sir Charles Fergusson Forbes, M.D., K.C.H., F.L.S.
COUNSEL—J. Measure, Esq., 4, Serle-street, Lincoln's-Inn-Fields.
SOLICITOR—Stephen Garrard, Esq., 13, Suffolk-street, Pall-Mall East.
ACTUARY.—John Finlaison, Esq., the Government Calculator, and President of the Institute of Actuaries.

Assurances are granted upon the lives of persons in every profession and station in life, and for every part of the world, with the exception of the Western Coast of Africa within the Tropics.

The Rates of Premiums are constructed upon Sound Principles with reference to every Colony, and, by payment of a moderate addition to the Home Premium, in case of increase of risk, persons assured in this office may change from one climate to another, without forfeiting their Policies.

Four-Fifths of the Profits are divided amongst the Assured.

JOSEPH CARTWRIGHT BRETTELL, Secretary

BRITISH GUARANTEE ASSOCIATION, —London: 9, Waterloo-place. Edinburgh: 127, Princes-street.

DIRECTORS.

CHAIRMAN—THOMAS QUESTED FINNIS, Esq., Alderman.

John Howell, Esq.	Sir Robert W. C. Brownrigg, Bart.
Henry Charles Chilton, Esq.	Frederick Wm. Caldwell, Esq.

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The Association, by its Act of Parliament, is subject to the annual supervision of the Board of Trade. It gives security for the fidelity of persons in situations of trust, and thereby provides to the employer a safeguard against loss arising through dishonesty or failure to account, in lieu of the uncertain protection afforded by private guarantee.

The Lords Commissioners of her Majesty's Treasury sanction the guarantee of this Association being taken for the fidelity of officers in every department, who are required to give security to the Crown; and the Directors receive proposals from persons employed in the

Treasury	Inland Revenue
Home Office	Customs
Colonial Office	Woods and Forests
Exchequer	Post Office
Admiralty	Poor Law Commission (exempt from Stamp Duty)
War Office	New County Courts.
Royal Mint	
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Also from Treasurers, Actuaries, or other Officers of the Savings Banks, Friendly Societies, Loan Societies, Government Annuity Societies, Benefit Building Societies, } The Bonds are certified by John Tidd Pratt, Esq., and are exempt from Stamp Duty.

Managers under the Joint-Stock Companies Winding-up Act, and all Public and Private Institutions, Receiverships, Insurance and Railway Companies, Banks, Mercantile Houses, and all other situations where security is required.

R. S. STRICKLAND Secretary.

THE RENT GUARANTEE SOCIETY, Incorporated under the 7 & 8 Victoria, c. 110. Capital, 100,000l.—No. 3, Charlotte-row, Mansion-house, London.

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Policies of Assurance are granted by this Society (at a moderate charge for collection and guarantee) for assuring to landlords the payment of the amount of their rents on a day certain;

To the Clergy, their tithe rent-charge;
To Trustees, their Trust Income;
To Mortgagees, their Interest; and
To Mortgagors, the Surplus Income from the property.

The Society, in undertaking the collection of rent without guarantee, affords the security of its capital for the immediate and punctual payment of the amounts collected; and will, if required, undertake the entire management of any property.

For particulars apply at the temporary Offices of the Society, as above.